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Farm Income for First Half Year 8% Under 1958

Net hits about $1 billion Under same period of '58, USDA report indicates

WASHINGTON—Farm income for the first half of 1959 was 8% less than the corresponding period of 1958, but over a $1 billion higher than the first half of 1957, according to a report just released by the Agricultural Marketing Service of the U.S. Department of Agriculture. The tabulation reported that the realized net income in the first six months of 1959 was at an average annual rate of approximately $12 billion, which is about $1 billion short of the 1958 figure.

Published in the "Farm Income Situation" report, AMS said that cash receipts from farm marketings in the first half of the year were only slightly smaller than in the first half of 1958, as lower average prices of farm products were largely offset by an increase in volume of sales.

Government payments, however, were lower than last year as acreage reserve payments were discontinued, and realized gross farm income was down about 1% from the first half of 1958.

"Production expenses continued their upward trend," the report says, "reaching a new high rate of $25.8 billion, 3% above their 1958 first half rate. Contributing to this increase were higher wage rates, property taxes and interest charges plus higher prices paid for feeder livestock, feed, farm machinery and motor vehicles."

The report noted, however, that "seed and fertilizer were the only important cost items for which average prices declined."

Revised figures on farmers' realized gross income, production expenses indicate new highs, with the former figure set at $38.3 billion and production expenses at $25.2 billion. Realized net income, now set at $13.1 billion, remains the highest in five years.

California Fertilizer Conference Visitors Hear of Growth Factors

SACRAMENTO—"Land, water and people are prime factors in the development of any agricultural enterprise and certainly have been involved significantly in the growth and character of California agriculture." This was the opening statement of Dr. Daniel G. Aldrich, Jr., who spoke following the banquet on June 29 in connection with the seventh annual California Fertilizer Conference.

Sponsored by the soil improvement committee, California Fertilizer Assn., the conference attracted 200 persons representative of fertilizer industry management, salesmen and technicians; commercial laboratory personnel; field representatives of canners, sugar refiners and other processors; research technicians of the University of California, and the several state colleges, and farmers, according to John H. Nelson and Earl R. Mog, conference co-chairmen.

Formal program was conducted on the campus of the university's college of agriculture, Davis, and the banquet was held in the Rodeo Room, El Rancho Hotel, West Sacramento.

The Monday morning program was opened by Dr. Stanley B. Freeborn, chancellor of the University of California, with a welcome to the campus. He pointed out that one of the first grants received by the college of agriculture was given by the association's soil improvement committee, which, with those which have succeeded it, are much appreciated.

Howard H. Hawkins, association president, pointed to the progress of the fertilizer industry since he became a part of it in 1946. Then, he recalled, less than a half million tons of commercial fertilizer were used annually in California, but, through steady and healthy growth, the state's consumers now purchase more than a million tons per year. He said that the university and state colleges deserve much credit, and pointed out that the association has been directing useful information to the farmers, bankers, and others concerned with the proper use of fertilizer.

Dr. Oscar A. Lorenz, vice chairman, department of vegetable crops, University of California, Riverside, presented new information concerning the most effective placement of fertilizer on bed grown vegetables, and outlined the movement in the beds of the principal types of material being used today. He said there is no one "best" location in the soil to place fertilizers for all crops and conditions. Advantages accrue from selective placement near the seed or seedling, but care must be used to place each material properly so as not to damage the young plants. This method will feed the crop plants, but not the weeds in the furrows, he said. Aqua and anhydrous ammonia should be placed farther from the plant than the dry sources of ammonic nitrogen, as they move more freely in the soil than do the dry forms.

Dr. Omund Lilleland, pomologist, University of California, Davis, presented data on proper fertilization practices in deciduous tree fruit orchards.

Dr. James A. Cook, viticulturist, University of California, Davis, reported on recent fertilizer tests in the

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H.R. 6436 Ready for Presidential Signature as Senate Approves Bill

WASHINGTON—H.R. 6436, a bill to extend the coverage of the Federal Insecticide, Fungicide and Rodenticide Act of 1947 passed the Senate on July 16, but because of a technicality involving a minor reference to a code number, the bill was sent back to the House for correction.

Washington observers said that there is no controversy on the measure and at press time the bill was expected to become law by the end of last week. Failure of the House to meet on Friday, July 17, prevented the matter from being placed on the consent calendar for Monday, which accounts for the delay. The President was expected to sign the bill without further discussion.

H.R. 6436 was passed by the House of Representatives on July 6. (Croplife, July 13, page 1.) The provisions of the bill amend the 1947 Act to include nematocides, defoliants, desiccants and plant regulators, materials hitherto occupying a legislative "no man's land." When the 1947 Act was passed, these materials were not in use and the original language of the legislation failed to make provision for such.

The new law will subject these products to the same labeling, registration and regulatory controls under the act as now apply to agricultural chemicals used for pest control purposes.

The pesticide industry has given its support to the legislation. In May, Lea S. Hitchner, executive secretary of the National Agricultural Chemicals Assn. appeared before a House committee expressing the hope of the industry that the measure would be given serious consideration.

A complete text of H.R. 6436 appeared in the May 4 issue of Croplife.

Southwestern Firm Breaks Ground for New Ammonia Plant

CHANDLER, ARIZ.—Ground has been broken for the new $4 million anhydrous ammonia plant being constructed by Southwestern Nitrochemical Corp., a new firm owned jointly by Southwestern Agrochemical Corp. and First Mississippi Corp. Original design and construction work is being handled by Chemical Construction Corp., New York.

The new plant will utilize hydrogen from a natural gas supply. An earlier announcement of plans to erect such a plant (Croplife, Dec. 1, 1958, page 1) were made by Owen Cooper, Yazoo City, Miss., chairman of the board for the First Mississippi Corp. and C. P. Gould, Litchfield Park, Ariz., president of Southwestern Agrochemical Corp. The announcement indicated that the new plant would produce at the rate of 60 tons a day of anhydrous ammonia.

Officers of the Southwestern Nitrochemical Corp. include Lee Rice, Phoenix, Ariz., president; J. Clyde Wilson, Buckeye, Ariz., and Duncan H. Sim, Tempe, Ariz., directors. Plant superintendent will be L. Richie, Mesa, Ariz.

The new plant will market its product in the southwestern portion of the country upon completion early in 1960.

USDA Announces Plans for '60 Conservation Reserve Project

WASHINGTON—The U.S. Department of Agriculture has announced plans for the conservation reserve of the Soil Bank for the 1960 crop season. This will be the fifth year of the program, under which farmers contract to withdraw general cropland from production and protect it with conservation uses for a period of 3 to 10 years.

The 1960 conservation reserve will be similar to the 1959 program. Principal changes have been made in regulations relating to publicly owned land, tenure of ownership, the method of setting payment rates, and the determination of priorities when more applications are received than can be accepted.

USDA says detailed information as to the application of these and other changes to individual farm situations will not be available in county ASC offices until mid-August, since time is required to instruct state and county office personnel in the new program.

The basic national per-acre rate of payment for 1960 will be $13.50, the same as for 1959. The acreage

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Citrus Nematode Controlled with One Application

TUCSON, ARIZ. — The citrus nematode, which infests more than half the groves in Arizona, may no longer create its insidious and widespread damage.

Now this particular nematode has been successfully and economically controlled up to two years with only one application of a chemical metered into irrigation water. The treatment was even more effective when accompanied by pruning and hedging—that is, sawing off the sides of a tree with rotating saws mounted on hydraulic booms. This combination treatment resulted in better shoot growth, more uniform fruit and better trees.

H. W. Reynolds and J. H. O'Bannon, U.S. Department of Agriculture nematologists, working with the University of Arizona Agricultural Experiment Station in the Salt River Valley, applied 2 to 10 gal. of DBCP per acre in three heavily infested groves. Control was good at 2 gal. per acre, nearly 100% at the higher levels.

Excessive amounts of DBCP—much more than used in the tests—can be toxic to citrus, so that it may be necessary in practice to use light doses and repeat the treatments. Because one treatment gave such good control, however, the scientists feel that follow-up treatments won't be needed for at least 5 years, provided growers get thorough DBCP cooverage the first time. This can be done if the soil is in good tilth and free of weeds, and the ground is level.

When the DBCP treatment was combined with hedging and pruning, the nematode-debilitated trees were rejuvenated and recovered much faster. Pruning without the DBCP treatment helps trees to recover, but only temporarily, since it has no effect on nematodes. But trees hedged and pruned after DBCP treatment showed new and vigorous flushes of growth. Nematode counts were low, of course, wherever DBCP was applied, even without pruning and hedging.

Oregon Amends Its Herbicide Control Act

SALEM, ORE.—Under chapter 464 of the 1959 laws of Oregon, farmers of the state who wish to regulate the application of insecticides within an area may petition the state department of agriculture for a protected or restricted area, or both. If the petition is approved upon public hearing, use of insecticides may either be limited or prohibited, as the case may be.

This law, which is an amendment to the herbicide application control act, also provides that petitions to "include within or exclude from the powers of an existing protected area the power to regulate the application of herbicides may be filed with the department." In this case, the same procedure will be followed as required to organize a protected area.

The authority for regulation of insecticides in certain areas resulted from a request of Malheur County farmers who want protection for the alkali bee, a prime pollinator of their alfalfa crops. The law, of course, is effective statewide.

Arkansas Duster Dies As Plane Stalls

WYNNE, ARK.—Charles H. Johnson, 48, Forrest City, pilot for the Hickory Ridge Flying Service, was killed instantly June 17 when his crop dusting plane crashed while he was spraying a field with liquid fertilizer.

Witnesses said Johnson had just turned the plane for a final run over the field when its engine backfired and stopped. The craft plunged into a wooded area, exploded and burst into flames.

RADIO-ACTIVE PLANT FOOD?

EL PASO, TEXAS—"Nine bushels of tomatoes from one plant, a fig tree that produced 7 bu. of figs the second year after being set out and peach, plum and apricot trees that bore fruit the same year of planting." That's the claim of Frank Cermin on the east slope of the Franklin Mountains near here. He attributes the extraordinary virility of his small, home orchard and vegetable garden to radioactive rocks which he buried below the sub-soil in his backyard.

The rock came from some mining claims which Mr. Cermin formerly held higher up on the mountain slope near his home. He said he dug 4 ft. holes, filled them to a depth of a foot or so with medium-sized ore samples, and planted his fruit tree seedlings on top. Later, as the trees grew and produced, he buried more rock under the soil of his vegetable garden.

Arkansas Grassland Affair Aims at More Land Use

LITTLE ROCK, ARK.—The First Arkansas Grassland Conference—aimed at bringing together research and information on the establishment of more pasture land in the state—will be held at the Barton Coliseum here Aug. 19.

Marvin Melton, chairman of the agricultural committee of the Arkansas State Chamber of Commerce, sponsoring organization, said he hopes the conference will point the way for the "most productive use of more land in Arkansas."

He added: "We have thousands of idle acres in Arkansas that are not producing what they should. We have arranged a complete program on grasses, including varieties, yields, fertilization, harvesting methods and management."

Dr. Dale Hinkle, head of the agronomy department at the University of Arkansas, will head a panel discussion on "Research That Points the Way in the South."

Dr. N. D. Morgan, of the American Potash Institute, Shreveport, La., will appear on one of the panels.

The Arkansas Plant Food Society, Arkansas Seed Dealers Assn. and the Arkansas Seed Growers Assn. are cooperating with about a dozen other organizations in sponsorship of the one-day conference.

Summerfallow Weed Controls Discussed By Canadian Experts

WINNIPEG—Control of weeds on land beng summerfallowed by means of herbicides exclusively or in conjunction with a minimum of tillage has been a project of the Brandon Experimental Farm in western Manitoba, for several years.

All broad-leaved annuals and perennials have been kept in complete subjection all season by one to three applications of 2,4-D ester at rates of ½ to 2 lb. of acid per acre according to the resistance of the kinds of weeds present. The only tillage given has been that required to prepare a seed bed the following spring.

Compared with well tilled fallow, yields on plots that receive herbicides only, have been 25% lower.

On plots where couch grass and annual grasses are present, TCA applied in June and again in September at 15 to 25 lb. per acre have been tested. Results on untilled fallow have not been satisfactory but in conjunction with one to three cultivations the chemical has given effective control of grass with relatively little reduction of a wheat crop the following year, the experimenters said.

The seasonal practice of maintaining a good summerfallow requires skill and good management on the part of farmers, but a compromise must be made between effective weed control and soil conservation. Soils and weeds specialists are stressing this fact in western Canada and suggest a good farmer is able to make this compromise and still maintain a weed-free, erosion-resistant summerfallow. Choice of tillage implements and adoption of trash cover practices is the secret of success.

They also point out that soil erosion on overworked summerfallow is not an unusual occurrence in many parts of western Canada. While farmers are correct in their assumption that a thoroughly tilled clean fallow assures the best kind of grain crop, there is the constant risk of serious erosion by wind and water on land left devoid of surface cover.

OPENS NEW OFFICE

ARTESIA, N.M.—Agriculture Products Co., which offers complete insecticide and herbicide services in Deming, Mesquite and Anthony, N.M., has opened a new office in Artesia under the management of Bill Campbell.

INSTALL OFFICERS—At their July meeting, the South Florida Chapter of the Florida Seedsmen & Garden Supply Assn. held their annual election and installation of officers. The election date was changed from mid-winter to July after the group, which was originally an independent garden supply association, became affiliated with the statewide Florida Seedsmen & Garden Supply Assn. this year. New officers installed to serve the South Florida Chapter for the coming year are: Claude Mercer, Mercer Seed Co., Miami, president; Robert Moore, Hollywood Farm & Garden Supply, Hollywood, Fla., vice president; Tom Gormly, Collins Chemical & Supply Co., Miami, secretary, and Norwood Glover, Hector Supply Co., Miami, treasurer. Shown above are Mr. Mercer, left, shaking hands with Gene Ennemoser, outgoing president.

F. E. McCormick

NAMED MANAGER — Frederick E. McCormick has been appointed manager of commercial development for American Cyanamid Co.'s agricultural division, New York City, announced by B. F. Bowman, division marketing director. Previously manager of market research for the division, Mr. McCormick has been with Cyanamid since 1957. A graduate of the Baruch School of Business Administration, Mr. McCormick is also candidate for a master's degree in general management at Columbia University.

Fertilizer Credited With County's Crop Yield Increases

TIFTON, GA.—Fertilizer consumption in Tift County last year increased to 25,575 tons for an increase of 4,484 tons over the previous year.

While the record of consumption for this year is not at hand, it is believed that the high volume use will be continued.

The increased amount of fertilizer is credited with helping Tift County to produce its appropriate share of increased yields in an intensified soil fertility program in six pilot counties.

Increased yields in the six counties brought in additional revenue of $3,711,695 from cotton and corn alone.

Estimated cost of fertilizer needed to produce the extra yields in the six-county area (Tift, Worth, Thomas, Colquitt, Laurence, and Coffee counties) was $1,813,080, leaving a profit from the corn and cotton increases of $1,898,597 as additional income.

Corn yields in counties averaged 39.8 bu. per acre compared to 33.9 bu. per acre for nine other counties used for comparison purposes. The counties used for comparison with the six pilot counties included Brooks, Telfair, Irwin, Jeff Davis, Jenkins, Wayne, Appling, Mitchell and Miller, none of which had a concentrated soil fertility program.

The increase in corn production brought in an estimated $2,986,075 to the six counties.

The same counties produced 462 lb. of lint cotton per acre, or 43 lb. more than the nine other counties, and added $815,584 to farmer income.

The Tift County fertilizer usage jumped 4,484 tons. One of the largest increases in fertilizer types was 5-10-15, which jumped from 415 tons to 2,756 tons last year.

Ammonium nitrate moved to 593 tons compared to 329 tons during the previous year.

This year 26 other counties are operating in the intensified fertility program, which is being continued in the other six counties.

SIGNS WITH CASTRO

HAVANA, CUBA — A production agreement between Erwin Arvey, head of a fertilizer firm, and Fidel Castro, Cuban prime minister, was signed recently. The agreement provides for the marketing of bat guano from Cuba's caves.

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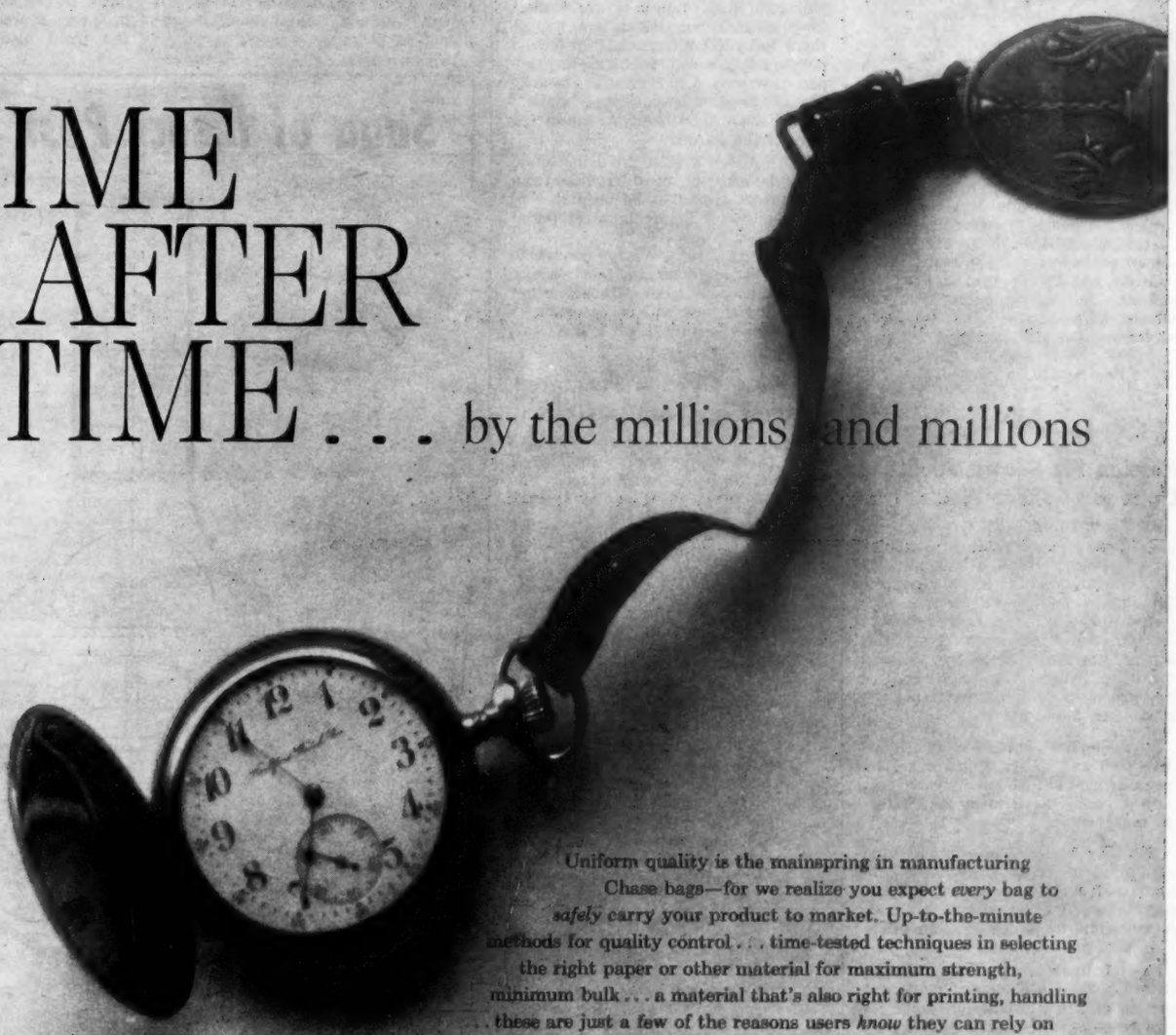

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INSECT, PLANT DISEASE NOTES

Plant Disease Weather Reported in Delaware

NEWARK, DEL. — Codling moth adults are continuing to emerge from apples collected in June. Red-banded leaf roller larvae are still present in some areas. Red mites continue active in some blocks.

Disease development in the state has been enhanced by recent heavy rainfall. The weather forecast is favorable for downy mildew on lima beans, and growers are urged to watch their fields and be prepared to spray.

In field crops, spider mites are increasing in soybeans and the pale-striped flea beetle is common in New Castle County. Bean thrips are abundant on soybeans in Kent and Sussex counties, while the potato leaf hopper and the saltmarsh caterpillar are present in some areas.—J. W. Heuberger and Donald MacCreary.

Hessian Fly Shows Up in Colorado Wheat Fields

FT. COLLINS, COLO. — Appearance of the Hessian fly in wheat fields of Sedgwick, Phillips, Yuma and Kit Carson counties has been reported. Damage to this year's crop is estimated at 1%. To minimize possible damage to the 1960 crop, growers in affected areas are advised to destroy volunteer wheat. Another control measure is to defer planting this fall until after Sept. 20.

Grasshopper populations continue localized and spotty. Control measures carried out earlier by ranchers and farmers have been successful in most areas.

Weld County has extremely high populations of tomato psyllid in both adult and nymphal stages on matrimony vine. Control efforts on both potatoes and tomatoes continue effective, however.

In commercial onion-producing areas of the state, onion thrips are causing damage. Populations have increased and growers have started control measures. San Luis Valley lettuce fields are showing heavy damage from the larval stage of the sugar beet webworm.

Populations are down and infestation relatively low for both the pea aphid and the larval stage of the alfalfa weevil in alfalfa fields of Sedgwick, Logan and Morgan counties. The three counties still show no sign of the spotted alfalfa aphid.

In the same three counties, Mexican bean beetle doesn't appear to pose much of a threat. Only a few egg masses and slight leaf damage have been noted.

The two-spotted spider mite is also reported on corn in field borders in this three-county area. The situation is not serious, although trouble could develop with continued hot, dry weather.

Leafhoppers, Other Pests Prominent in Missouri

COLUMBIA, MO.—Leafhoppers are still causing yellowing on alfalfa. In the northern counties, most of the alfalfa is ready to cut, and therefore should not be sprayed. In the southern and central sections, watch new growth following cutting, and if yellowing begins to show, spraying will help.

Corn leaf aphids are still on late corn and grain sorghum, but the situation has not changed. In the drier areas, grasshoppers are still moving into crops, particularly alfalfa and clover. If large numbers are noticed in field margins, it's safest to get them sprayed out immediately. Grasshoppers that cause trouble in the garden have moved in from some nearby grassy area. Consequently, control should start by spraying around the edge of the garden.

Some blister beetles are being found in soybeans, but most trouble from this insect seems to be occurring in home gardens, particularly in tomatoes.

Bagworms are now large enough to be readily noticed in most areas, usually in cedar trees, although other trees and shrubs will be occasionally damaged.—Stirling Kyd and G. W. Thomas.

Average of 39% Punctured Squares in Georgia Cotton

ATHENS, GA.—Square counts made in 42 middle and south Georgia cotton fields had a range of from 8 to 80% punctured squares. The average was 39%.

Highest count was in Lowndes County where the range was from 40% to 80%. Houston County was also high with the range being 60% to 71%.

Washington County had a high of 70%; Coffee County 69%; Dooly, 68%; Berrien, 64%; and Cook and Tattnall, each 60%.

Bollworm counts made in 42 cotton fields in middle and south Georgia showed low populations with a range of 0 to 9 eggs per 100 terminals, averaging 3. Larval counts ranged from 0 to 9 per 100 terminals, with an average of 2.

Light to heavy infestations of cotton aphids and spider mites were reported in south Georgia cotton fields. —W. C. Johnson.

Corn Borer Infestation In Some Parts of Iowa

AMES, IOWA—A survey of first brood European corn borer in Iowa showed heaviest infestation in southeastern O'Brien County where 100% of the plants were infested. Some 1,150 borers were found on 100 plants. In general, the borers are a little ahead of 1958's figures. On the basis of the recent survey, however, it appears that the second brood infestation will be light.

Adult beetles of the northern corn rootworm showed up in Sioux, Polk and Story counties. They feed on pollen and silks and lay their eggs in the soil of the corn field. New adults of the southern corn rootworm are also appearing.

Second instar larvae of corn earworms were feeding in tassels in Sioux County. Silks in the few mature fields in north Iowa were too new for larvae—but the worms will hit.

Corn leaf aphids are present in all tassels. Some fields show many aphids, others few. Lady beetle larvae and adults, aphid lions, and parasitic wasps are active. We can't make any recommendation for chemical control of this insect either in corn or grain sorghum.

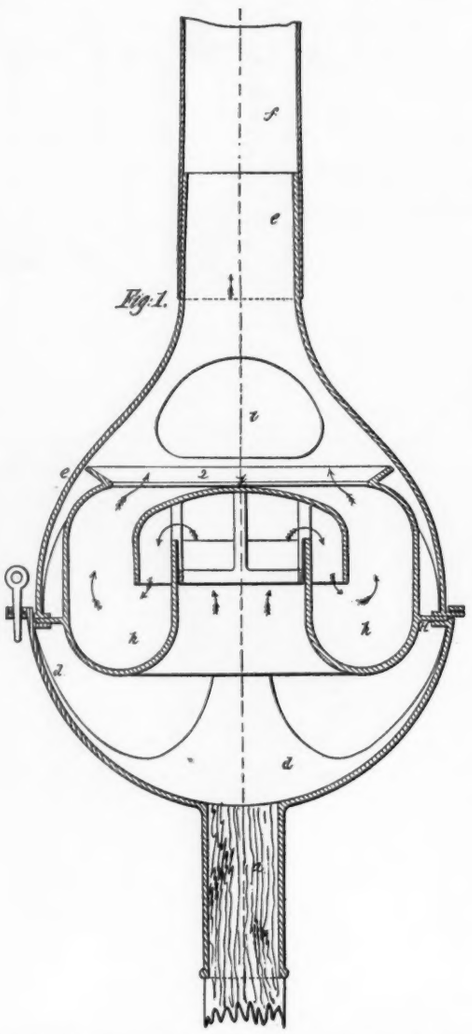
Red-leg and differential grasshoppers ranged 3 to 12 per sq. yd. in fencerows and roadsides in northern Iowa. They ranged from 1st to 3rd instar. Damage was showing in adjacent soybeans.

Book lice were sent in from stored grain in Lucas and Emmet counties. These are small, yellowish white, soft-bodied insects, some winged and some wingless. They are found in paper and books in libraries, and in damp grain. The simplest control measure is to dry out the damp spot. Fumigation alone will kill the book lice present at the time of fumigation, but does not prevent reinfestation of the damp grain.

Potato leafhoppers averaged 5 per linear foot in soybeans in north Iowa. Some plants show curled leaves. We have no information on losses to soybeans from this pest.

Fungus beetle larvae (probably hairy fungus beetle) were brought in from hay mows and milk houses in barns in Dallas County. The hay was probably stored damp, molded, and the mold attracted fungus beetles.

Saga of Insect Pest Control



LONG BEFORE the days of polyethylene-covered trees to prevent the escape of toxic fumes in fumigation operations, two inventors, Constant Baudouin and Alphonse Fteley of New York patented a fumigation device of rather ingenious conception. It was a "fumigating" device for the destruction of caterpillars and other insect pests in trees. It would accomplish this end through fumigation or heat, or by use of the two jointly.

The drawing shows the main working parts of the device as pictured in the patent papers dated March 2, 1869. The fumigator utilized the principle of burning sulfur or tobacco, smoke and fumes of which were to destroy the insects.

At the bottom of the flask-like unit is a pole of almost any length designed to permit the operator to extend the fuming device into higher branches of a tree nearer the desired victim. The patent description also mentions the fact that a metallic spear-like lower end of the pole makes it possible to stick it in the ground under the tree so the operator would not need to stand and hold the fumigator up in the air.

The patent description did not indicate what materials would be burned to generate the necessary heat, but the general appearance and shape of the vessel suggests the employment of charcoal or similar fuel.

They laid eggs in the moldy hay. The larvae are now looking for a place to pupate, and get into the milk room.—Harold Gunderson.

Grasshopper Buildup Hinted in Arkansas

HUNTSVILLE, ARK.—Jay D. Humbard, associate Madison County agent, has reported that a serious infestation of grasshoppers appears to be building up in this area of northwest Arkansas.

Mr. Humbard said "large numbers of farmers and livestock producers have been complaining of the sudden increase of grasshoppers in the region." Most of the hoppers have been concentrated in fencerows and weeds surrounding cultivated fields and gardens, but continued dry weather may drive them into the fields.

California Entomologists Find Rice Water Weevil

SACRAMENTO, CAL.—A rice water weevil, Lissorhoptrus oryzophilus, new to California, has been found in many Butte County rice fields. The discovery of the rice water weevil, about ⅛ inch long, was reported by entomologists of the University of California at Davis, who notified the Department of Agriculture. The tiny pest was found by Dr. Harry Lange and Dr. Albert Grigarick while they were investigating rice insects.

In cooperation with L. D. McCorkindale, Butte County agricultural commissioner, department entomologists surveyed the entire area and determined that the new pest is present in at least a 175 square mile area in Butte County. One planting in Glenn County has also been reported infested.

All county agricultural commissioners are being informed of the pest and asked to survey for it in rice-growing areas.

Robert W. Harper, chief of the bureau of entomology, said the amount of damage the pest might do in California rice-growing areas is not measurable at present. A closely related weevil is a native of North America and extends from New England and Canada westward to Michigan and Iowa and south to Texas and Florida.

Insect Populations Low In Wisconsin Areas

MADISON, WIS.—In alfalfa, potato leafhopper development has not advanced, apparently due to cooler weather during the past two weeks. Egg laying seems to be at a standstill, and there has been no sharp movement of migrating adults. It is expected this situation may change soon with warming trends and with migrations from states to the south. Perhaps a greater difference in the time that the first cutting was made exists in most localities than for many years. However, it is expected that in recently cut fields, as well as fields cut from now on, yellowing will be pronounced in fields receiving no treatments.

Grasshopper counts in the northwestern counties average one per sweep or less. Clark and Wood counties have higher populations with 12 per sweep, but this is unusual. Adams and Marquette counties had the highest counts with 35 per yard the highest.

Only a few greenbugs were caught in Madison traps, but on corn the corn leaf aphid continued to build populations which have reached considerable size in certain locations for this time of the year. In most corn areas, the likelihood of corn leaf aphids building larger populations than in 1957 is great.

Pea aphids and bean aphids were caught in increasing numbers.

Lodged corn and "goose-necked" stalks resulting from the feeding of northern corn rootworm larvae are present in some fields planted to corn for several years in succession. Adults are present in the soil, and will soon appear. Larvae, also, are still feeding in the roots, and pupae may be found a short distance away.

"Yellows" (aster-yellows) is showing up in carrots in southeastern counties. This early appearance indicates the possibility of a rather high rate of infection by this disease which is spread by six-spotted leafhoppers. In commrecial head lettuce fields receiving frequent treatments in Marquette County, the incidence of "aster-yellows" is estimated at 2%. On small grain at Madison, populations of both adults and nymphs are as high as has ever been observed. Over 300 adults and over 300 nymphs were found in old grain now turning color. Migrations are indicated by catches of as many as 300 per night in blacklight traps.

Corn Borer Survey Shows Low Population Count

MANHATTAN, KANSAS — Most corn fields checked for European corn borer in Republic and Jewell counties had counts ranging from 0 to 5 borers per 25 plants with an average of about 1 borer per 25 plants. One field had 5 to 13 borers per 25 plants. The borers were in the stalks with an occasional borer in the whorls. Some borers had pupated and most of the borers were in stalks so control measures would not be effective.

Most corn fields in Republic and Jewell counties were less than 1% infested with corn earworms. One field in Jewell County was about 30% infested. Corn earworms were in tassels and whorls.

Spotted alfalfa aphids were collected in the field at a rate of less than 1 per sweep during the month of June in Ellis County. One roadside stop in Jewell County showed about 5 aphids per sweep.

Harlequin bugs are still a problem on cabbage and related plants as well as some ornamentals, and sorghum webworms have been reported in sorghum heads from Montgomery County. These small fuzzy caterpillars can do considerable more damage than either corn earworms or fall armyworms.

Heat, Drouth, Reduce North Carolina Insects

RALEIGH, N.C.—The weather has been completely reversed now since the rains started in early July. Many fields have been too wet for movement of tractors and spray equipment. All sections report ample moisture but some still have little excess. The cotton crop generally looks fine with

(Turn to INSECT NOTES, page 17)

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'FACTORY' CONCEPT OF FARM . . .

Crop Production Cost Includes All Plant Nutrients Removed by Plants

By Malcolm H. McVickar
Chief Agronomist
California Spray-Chemical Corp.

A FARM is actually a factory which processes raw materials into finished products of feed, food and fiber. To complete the analogy, the land is the plant site, the crop is the manufacturing plant, and raw materials include plant nutrients, water, oxygen from the atmosphere and energy derived from sunlight.

In calculating production costs of this "factory," the only items to be ignored are sunlight and air which are literally free and are beyond the control of man. But water and plant nutrients are certainly raw materials which must be included in any figuring of production costs. At this time, however, only plant nutrients are the subject for discussion in this study.

These materials are utilized in the finished products, and when the crops are shipped away, the used plant nutrients leave the farm too. Therefore, their cost should be considered in any calculation of production costs. A farmer withdrawing plant nutrients from his land without figuring the cost of these plant nutrients in his profit and loss statement is kidding himself when it comes to determining his true cost of production.

On the other hand, a farmer adding generous quantities of fertilizer in excess of what is removed by his harvested crop, should consider the residual value of the fertilizer in arriving at his true cost of production.

Soil fertility is not inexhaustible. Yet, few, if any, economists give consideration to this fact in calculating farm production costs and profits. The time will come when the soil fertility balance will be weighed in arriving at profit and loss.

The unfortunate thing happening is that many of our farmers are mining their land of precious plant nutrients and are actually paying tax on these nutrients removed from their farm. Our tax laws do not provide for charging against profits the value of plant nutrients that many farmers mine from their land and sell off of the farm. On the other hand, plant nutrients added in the form of fertilizers are considered a production expense.

A study of yield data on some California crops is eloquent in setting forth a true picture of comparative production costs. Dr. Duane Mikkelsen, agronomist with the California Agricultural Experiment Station, has no difficulty in raising a 2.6 bale per acre cotton crop in Kern County when he follows a good fertilization program. Without fertilizer, 1.75 bale per acre crop is considered above average.

The University of California has made extensive studies on what it costs a cotton grower to raise and market a 1.75 bale per acre crop in Kern County. This breakdown, item by item, is shown in tabular form in Table 1, column 1. A bit of simple arithmetic gives the cost of each item per bale of cotton produced. These figures are presented in column 2 of the same table.

None of these costs make any charge for plant nutrients removed by the crop from the soil. The lint and seed in 1.75 bales of cotton contains approximately 70 lb. nitrogen, 15 lb. phosphate, and 20 lb. potash —a total of 105 lb. plant nutrients. This is the amount of plant food sold off the farm. The 105 lb. of plant nutrients—raw materials—have been consumed in the production of the final product. The cost of these raw materials should, therefore, be figured in the cost of producing the crop. Figuring plant food at an average cost of 10¢ lb., we should then add another cost item—$10.50 for plant nutrients.

If we accept the concept of charging for raw materials, then the true costs of production and the true unit cost per bale change considerably. These true costs are given in column 3 and column 4—Table 1. The production costs per acre moves up from $206.91 to $217.41; the production per bale from $118.20 to $124.20. This increase in true production cost must be subtracted from what we normally consider profit. Making this bookkeeping allowance for nutrients sold off the farm, we find that a cotton farmer growing a 1.75 bale an acre crop on unfertilized land really only makes a profit of $126.63 per acre and only $72.33 per bale—not $137.03 per acre and $78.33 per bale.

Wonder how the use of fertilizer would alter the production costs and profit picture? Well, let's see. We have already mentioned that with good fertilization, Dr. Mikkelsen has no trouble in growing 2.60 bales an acre.

The itemized expenses associated with a 2.60 bale per acre cotton crop are given in column 1 of Table 2. The costs per bale are itemized in column 2 of the same table. In this particular experiment, Dr. Mikkelsen figured the fertilizer cost at $12 per acre and the application at $2.50 per acre—a total of $15 per acre.

Now let's complete our arithmetic and make allowances for plant nutrients used and see how the true cost and true profits change. These figures are given in columns 3 and 4 of Table 2.

Again, the profit picture changes. At a glance, we see that both growers, the one using fertilizer and the non-fertilizer user, find that their true cost of production goes up and their true profits slip. The interesting thing, however, is that the shift in profits is not the same for both producers. When profits are figured in the conventional manner—that is no charge for plant nutrients withdrawn from the soil—the 2.60 bale an acre grower makes ($258.90 minus $137.03) $120.87 more an acre than his neighbor who does not use fertilizer. When plant nutrients consumed are figured in the cost and profit picture, the difference amounts to ($251.90 minus $126.73) $125.27—an extra $4.40 dividend an acre for the fertilizer user.

Figuring on a bale basis, the grower using fertilizer also gains in profit over his non-using neighbor. Figuring without plant nutrient utilization, the 1.75 bale grower produces cotton for $118.20 per bale; the cost for the grower using fertilizer is $96.85 per bale—a difference of $21.35 in favor of the fertilizer user. These figures, when charge is made for plant nutrients used are: $124.20 for the non-user and $97.26 for the grower fertilizing —a difference of $26.94 per bale. This difference, a "hidden dividend" of $7.59 per bale from the use of fertilizer is overlooked under conventional methods of figuring profit and loss.

It all boils down to the fact that farms are factories. These farms produce goods from raw materials and if we do not consider all of the costs of raw materials consumed in the production process, we are actually kidding ourselves as to the true costs and true profits. A volume would be written on different ways one might calculate the cost of plant nutrients consumed in producing farm products. Only one has been discussed, and briefly in this article, solely for the purpose of focusing attention on the need for a new look at our farm profit and loss statements so that we will stop kidding ourselves on what our true costs and true profits are.

TABLE 1. Normal Production Costs of a 1.75 Bale Cotton Crop vs. True Costs When Figuring Plant Food Depletions

	—Normal Methods— of Calculation		—Charge for Plant— Food Depletion	
	(1) Acre	(2) Bale	(1) Acre	(2) Bale
Preharvest Labor and Material Costs				
Land preparation	$ 10.60	$ 6.05	$ 10.60	$ 6.05
Planting	1.07	.61	1.07	.61
Seed	1.44	.82	1.44	.82
Irrigating	18.90	10.80	18.90	10.80
Water and power to irrigate	15.75	9.00	15.75	9.00
Cultivating	8.40	4.80	8.40	4.80
Hoeing and weeding	10.80	6.17	10.80	6.17
Pest control	2.00	1.14	2.00	1.14
Dust for pest control	4.50	2.57	4.50	2.57
Misc. labor and materials	2.50	1.43	2.50	1.43
Fert. and cost of applying	None	None	None	None
Harvesting Costs				
Picking and hauling	$ 44.63	$ 25.50	$ 44.63	$ 25.50
Gin., bag., ties, ins., stor.	20.25	11.57	20.25	11.57
Cash Overhead Costs				
General expense	$ 7.68	$ .39	$ 7.68	$ 4.39
County taxes	6.25	3.57	6.25	3.57
Misc. repairs, ins., etc.	5.00	2.86	5.00	2.86
Depreciation				
Irrigation facilities	$ 15.00	$ 8.57	$ 15.00	$ 8.57
Crop equipment	1.70	.97	1.70	.97
Plant Nutrients Utilized				
Nitrogen, phosphate, potash			$ 10.50	$ 6.00
Interest on Investment				
Facilities and equipment	$ 5.43	$ 3.10	$ 5.43	$ 3.10
Land	25.00	14.28		
Total cost	$206.91	$118.20	$217.41	$124.20
Value of Crop				
Lint	$306.75	$175.00	$306.75	$175.00
Seed	37.69	21.53	37.69	21.53
	$343.94	$196.53	$343.94	$196.53
Total cost of production	$206.91	$118.20	$217.41	$124.20
Profit	$137.03	$ 78.33	$126.63	$ 72.33

TABLE 2. Normal Production Costs of a 2.60 Bale Cotton Crop vs. True Cost When Figuring Plant Food Additions and Depletions

	—Normal Methods— of Calculation		—Charge for Plant— Food Depletion	
	(1) Acre	(2) Bale	(1) Acre	(2) Bale
Preharvest Labor and Material Costs				
Land preparation	$ 10.60	$ 6.05	$ 10.60	$ 6.05
Planting	1.07	.41	1.07	.41
Seed	1.44	.55	1.44	.55
Irrigating	18.90	7.26	18.90	7.26
Water and power to irrigate	15.75	6.05	15.75	6.05
Cultivating	8.40	3.23	8.40	3.23
Hoeing and weeding	10.80	4.15	10.80	4.15
Pest control	2.00	.77	2.00	.77
Dust for pest control	4.50	1.73	4.50	1.73
Misc. labor and materials	2.50	.96	2.50	.96
Fert. and cost of applying	15.00	5.76	15.00	5.76
Harvesting Costs				
Picking and hauling	$ 64.98	$ 24.99	$ 64.98	$ 24.99
Gin., bag., ties, ins., stor.	30.08	11.57	30.08	11.57
Cash Overhead Costs				
General expenses	$ 7.68	$ 2.95	$ 7.68	$ 2.95
County taxes	6.25	2.40	6.25	2.40
Misc. repairs, ins., etc.	5.00	1.92	5.00	1.92
Depreciation				
Irrigation facilities	$ 15.00	$ 5.76	$ 15.00	$ 5.76
Crop equipment	1.70	.65	1.70	.65
Interest on Investment				
Facilities and equipment	$ 5.43	$ 2.09	$ 5.43	$ 2.09
Land	25.00	9.61	25.00	9.61
Plant Nutrients Utilized				
Plant food withdrawn			$ 19.50	$ .86
Plant food added			+12.50	+.48
Net charge for plant food from soil..			$ 7.00	$ .38
Total cost	$252.08	$ 96.88	$259.08	$ 97.26
Value of Crop				
Lint	$455.00	$175.00	$455.00	$175.00
Seed	55.98	21.53	55.98	21.53
	$510.98	$196.53	$510.98	$196.53
Total cost of production	252.08	96.88	259.08	97.26
Profit	$258.90	$ 99.65	$251.90	$ 99.33

FIRM INCORPORATES

GRAND FORKS, N.D.—Chemical Solids, Inc. has filed articles of incorporation to manufacture and sell farm and industrial chemicals, listing $50,000 capitalization. Incorporators include Alan J. Twomey, Paul B. Kampf and Frank G. Rumreich, all of Grand Forks.

Nine Year Battle Against Sugar Beet Leafhopper Greatly Reduces Infection

SAN FRANCISCO, CAL. — Nine years of sustained attack directed against sugar beet leafhoppers in the San Joaquin Valley have reduced annual populations to the extent that damage from the virus carried by the leafhoppers affects less than 1% of susceptible crops, according to Robert W. Harper, chief of the bureau of entomology, California Department of Agriculture.

The department, through a beet leafhopper field office in Coalinga, Fresno County, has carried on the campaign with the cooperation of county agricultural commissioners, sugar beet growers, tomato associations, and other interested agricultural groups.

The work has involved the annual application of a series of four sprays commencing in the fall and extending through the winter and spring seasons.

Surveys this year indicate that remnant populations surviving the various spray treatments have migrated from the foothill breeding grounds and have spread over the floor of the San Joaquin Valley. Preliminary crop surveys also show that the surviving hoppers are few, and that growers once more can anticipate that losses of crops due to beet leafhoppers will be negligible.

The pests carry "curly-top" disease which affects sugar beets, tomatoes, melons, flax, beans, potatoes and other susceptible vegetable crops. The plants are infected with the curly-top virus as the insects light on them and feed following their flight from over-wintering areas in the western foothills of the San Joaquin Valley.

Prior to 1948, the battle against the hoppers was waged entirely by the sugar beet growers association. The State Department of Agriculture got into the campaign that year and stepped up the effort in 1950, when the annual outbreak reached a serious peak and many tomato growers lost their entire crop. Damage that year from curly-top disease in the counties of Tulare, Merced, Fresno and Madera was estimated at $6 million.

The value of the crops protected each year by the department's campaign is estimated at $100 million.

The total cost of the campaigns to the state from 1950 to 1959 has exceeded $2 million, the annual cost representing less than one-fourth of 1% of the annual value of the crops protected from curly-top virus. It is estimated the yearly campaigns against the hoppers result in savings of $19 million to growers of crops which otherwise might be damaged severely.

The battleground each year includes about 250,000 acres of rangeland extending from the Tehachapi Mountains to the Delta area of the Sacramento Valley.

The campaigns are opened in the fall with the application of insecticide sprays by aircraft. The insects concentrate in the fall on Russian thistle plants. All Russian thistle areas are treated with the death dealing material which, however, has no effect upon native vegetation or other animal life. It kills leafhoppers, and leafhoppers only, for all practical purposes.

The surviving hoppers move to the breeding grounds in the foothills in the late fall. They feed on annual grasses which spring up after the first fall rains. The hoppers in the breeding grounds are sprayed from ground rigs, each one carrying 100 gal. of insecticide.

Following each application of insecticides, a count is made of surviving insects to determine the extent of the total number killed. After the insects have migrated into the valley, another count is made in crop areas, and a third and final estimate is made through a survey of the actual incidence of the disease in the cultivated areas.

Although good control of the pests has been achieved in recent years, Mr. Harper does not anticipate that there will ever be a year when the campaign to suppress the hoppers can be dropped entirely.

While there is good control of beet leafhoppers in the San Joaquin Valley, the situation is not as favorable regarding the same pest in the Imperial Valley. The year-around production of sugar beets in the Imperial Valley provides a continuing source of insect reproduction. A summer period of no beet growing, a weed elimination program and an emergency state-county spray program on remaining weed hosts has served to reduce the populations of the hoppers, but has not brought about control comparable to that achieved in the San Joaquin Valley.

Mr. Harper and his associates believe that there is some undetected source of reinfestation outside of the Imperial Valley which will continue to aggravate the problem until discovered. In 1956, leafhopper losses to miscellaneous crops in the Imperial Valley were estimated at $7 million. Losses have been relatively light since then, but still are higher than the rate recorded for the San Joaquin Valley.

Oklahoma Company Announces Sale Plans

OKLAHOMA CITY, OKLA. — An order by the U.S. District Court Judge, Stephen S. Chandler, was filed today authorizing Nichols Seed & Fertilizer Co. to sell its farm fertilizer plant southwest of Oklahoma City by sealed bids. Bids must be filed in the U.S. District Court Clerk's office by 11 a.m. Aug. 10, 1959.

The bids on the Nichols plant, one of the largest fertilizer producers in Oklahoma, will be opened at 2 p.m. the same day and the plant sold, subject to approval and confirmation by the court.

Earl Nichols, president, said this is the first step in the company's reorganization plan to get out of the farm fertilizer business and devote full time to the distribution and production of seeds, agricultural chemicals and allied merchandise for farms and homes.

Four Join California Agricultural Aircraft Group

FRESNO, CAL.—Four new members have joined the Agricultural Aircraft Assn., Inc. of Fresno, Cal., according to Wanda Brandstetter, executive secretary.

Two are voting members and include Aero Atlas, Inc. of Red Bluff, represented by Warren H. Bullock, president, and Valley Flying Service of Fresno, E. C. Gabbert and R. A. Divine, partners.

The out-of-state members are Mid-Continent Aerial Sprayers, Inc. of Hayti, Mo., represented by Richard Reade, president; and Mangum Flying Service of Bay City, Texas, John J. Mangum, Jr., owner.

GRAIN OUTPUT DROPS

BOISE, IDAHO—Idaho's estimated grain harvest this year is expected to dip slightly from last year's production of 42,492,000 bu. The U.S. Department of Agriculture Crop Reporting Service has estimated the 1959 crop at 40,423,000 bu. The estimate is slightly above the 10-year mean, however, by about 40,000 bu.

Minnesota Meeting To Feature Speakers, Demonstrations, Panels

ST. PAUL, MINN.—The University of Minnesota will be the site for a summer educational meeting of agricultural leaders, farmers and representatives of the fertilizer trade from a half dozen or so upper midwestern states Aug. 28-29.

Paul Lindholm, president of the Minnesota Ammonia Dealers group, will preside over the meeting. Minnesota Anhydrous Ammonia Dealers Assn., the institute of agriculture at the University of Minnesota, and the Agricultural Ammonia Institute are joint sponsors. Dr. W. P. Martin, head of the soils department at the university will welcome the visitors and will preside at one of the sessions. Jack F. Criswell, executive vice president of the AAI, will preside at the final session.

Test spots demonstrating rates of ammonia and other nitrogen materials on corn and grass crops will be discussed on the program. The discussions will be taken from papers given by agronomists and soils specialists of educational institutions and commercial fertilizer industries.

S. C. Smith of Uvalde, Texas, president of the AAI, will start proceedings with a talk on "The Nitrogen Picture."

The remainder of the first day program follows:

"The Tools—Soils—Crops—Fertilizers," Dr. John Murdock, soils department, University of Wisconsin, and Richard Rust, soils department, University of Minnesota.

"Moisture and Its Relationship to Yields and Fertilizer," Dr. R. E. Holt, ARS-USDA.

"The Nitrogen Cycle," Dr. Ed L. Schmidt, soils department, University of Minnesota.

"Nitrogen Carry-Over — Residual Losses," Dr. W. P. Martin, soils department, University of Minnesota.

"Nitrogen in Over-All Soil Management," Dr. Paul Burson, soils department, University of Minnesota.

"Nitrogen Only? For How Long?" Dr. A. C. Caldwell, soils department, University of Minnesota.

"Nitrogen on Pastures and Hay," Lowell Hanson, extension soils specialist, University of Minnesota.

"Some Misconceptions about Nitrogen on Corn," Dr. John MacGregor, soils department, University of Minnesota.

"Why I Use Ammonia in my Farm Operations," Les Boler, farmer, Truman, Minnesota.

Field tour to demonstration plots in St. Croix area, followed by outdoor barbecue.

The Saturday program includes:

"Keeping the Customer Sold through Service," Dr. R. W. Scanlan, Phillips Petroleum Co.

"Ammonia Equipment," Clarence Hansen, agricultural engineering department, Michigan State University.

"My Plowdown Program," Ole Palmquist, farmer, Milbank, S. D.

"The Future of Nitrogen Fertilizer," John Wiley, Central Farmers Fertilizer Co., St. Paul, Minn.

"The XYZ's of Nitrogen Use in the North Central States," a panel: moderator, Dr. Leo Orth, Sinclair Petrochemicals, Inc.; Les Boler, Ole Palmquist, Clarence Hansen, John Murdock, Lowell Hanson and Curtis Overdahl.

New Lime Firm

LITTLE ROCK, ARK.—The War Eagle Lime Co., Inc., Huntsville, Ark., has filed articles of incorporation with the office of the Arkansas secretary of state here. Incorporators were Robert Lee Yarbo, John E. Yarbo and Hubert Ernest Yarbo, all of Huntsville. John E. Yarbo was named as the firm's agent. Papers of incorporation said the firm was being formed to operate a lime, fertilizer and bulldozer work business.

1959 Round Table To Cover Current In-Plant Problems

WASHINGTON — An interesting instructive program of items that concern current problems in the processing of granulated and conventional fertilizers constitutes the agenda for the 1959 fertilizer industry round table, according to Dr. Vincent Sauchelli, chemical technologist of the National Plant Food Institute, chairman of the round table.

This year's theme is "Practical Problems in Processing Fertilizers," he says. Featured will be a detailed description of two plant processes from raw materials to shipment. Two well-known experienced operators will each tell about their layouts, process, mistakes to avoid, good features to accentuate and will be prepared to answer pertinent questions. Plenty of time will be provided for question and answer periods.

Problems associated with the manufacture of conventional type fertilizers will have a place on the program this year. Statistical quality control will be discussed by two noted statisticians featuring theoretical descriptive and practical applied phases of the subject. A subject of universal interest at present is preneutralization. A symposium on the subject will be presented.

Registration will begin on Nov. 3 between 7 and 9:30 p.m. at The Mayflower Hotel. Those who can are urged to register at this time. Registration will continue at 8:30 a.m. Nov. 4.

A detailed program will be released next month, Dr. Sauchelli says.

PLANT DISEASE HANDBOOK

FORT COLLINS, COLO. — The third edition of the Colorado Handbook of Plant Diseases," a 230-page volume, has been published by the Colorado State University Extension Service. It contains a revised list of major plant diseases and methods of control.

Theodore I. Stone

NEW VICE PRESIDENT—Theodore I. Stone has been made vice president and treasurer of Wilson & Geo. Meyer & Co., western distributors of agricultural and industrial chemicals and plastics, Jeffery W. Meyer, president, announced. Mr. Stone, who has been with the company for 21 years, has previously served as an accountant, senior accountant and treasurer. As vice president and treasurer he will be manager of the newly organized administrative and finance department of the firm and its affiliated companies. A native of Illinois, Mr. Stone was graduated from the University of California in accounting. Prior to joining the Meyer firm in 1938, he was associated with the San Francisco office of the First Boston Corp.

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Gin., bag., ties, ins., stor.	20.25	11.57	20.25	11.57
Cash Overhead Costs				
General expense	$ 7.68	$ .39	$ 7.68	$ 4.39
County taxes	6.25	3.57	6.25	3.57
Misc. repairs, ins., etc.	5.00	2.86	5.00	2.86
Depreciation				
Irrigation facilities	$ 15.00	$ 8.57	$ 15.00	$ 8.57
Crop equipment	1.70	.97	1.70	.97
Plant Nutrients Utilized				
Nitrogen, phosphate, potash			$ 10.50	$ 6.00
Interest on Investment				
Facilities and equipment	$ 5.43	$ 3.10	$ 5.43	$ 3.10
Land	25.00	14.28		
Total cost	$206.91	$118.20	$217.41	$124.20
Value of Crop				
Lint	$306.75	$175.00	$306.75	$175.00
Seed	37.69	21.53	37.69	21.53
	$343.94	$196.53	$343.94	$196.53
Total cost of production	$206.91	$118.20	$217.41	$124.20
Profit	$137.03	$ 78.33	$126.63	$ 72.33

TABLE 2. Normal Production Costs of a 2.60 Bale Cotton Crop vs. True Cost When Figuring Plant Food Additions and Depletions

	—Normal Methods— of Calculation		—Charge for Plant— Food Depletion	
	(1) Acre	(2) Bale	(1) Acre	(2) Bale
Preharvest Labor and Material Costs				
Land preparation	$ 10.60	$ 6.05	$ 10.60	$ 6.05
Planting	1.07	.41	1.07	.41
Seed	1.44	.55	1.44	.55
Irrigating	18.90	7.26	18.90	7.26
Water and power to irrigate	15.75	6.05	15.75	6.05
Cultivating	8.40	3.23	8.40	3.23
Hoeing and weeding	10.80	4.15	10.80	4.15
Pest control	2.00	.77	2.00	.77
Dust for pest control	4.50	1.73	4.50	1.73
Misc. labor and materials	2.50	.96	2.50	.96
Fert. and cost of applying	15.00	5.76	15.00	5.76
Harvesting Costs				
Picking and hauling	$ 64.98	$ 24.99	$ 64.98	$ 24.99
Gin., bag., ties, ins., stor.	30.08	11.57	30.08	11.57
Cash Overhead Costs				
General expenses	$ 7.68	$ 2.95	$ 7.68	$ 2.95
County taxes	6.25	2.40	6.25	2.40
Misc. repairs, ins., etc.	5.00	1.92	5.00	1.92
Depreciation				
Irrigation facilities	$ 15.00	$ 5.76	$ 15.00	$ 5.76
Crop equipment	1.70	.65	1.70	.65
Interest on Investment				
Facilities and equipment	$ 5.43	$ 2.09	$ 5.43	$ 2.09
Land	25.00	9.61	25.00	9.61
Plant Nutrients Utilized				
Plant food withdrawn			$ 19.50	$ .86
Plant food added			+12.50	+.48
Net charge for plant food from soil..			$ 7.00	$ .38
Total cost	$252.08	$ 96.88	$259.08	$ 97.26
Value of Crop				
Lint	$455.00	$175.00	$455.00	$175.00
Seed	55.98	21.53	55.98	21.53
	$510.98	$196.53	$510.98	$196.53
Total cost of production	252.08	96.88	259.08	97.26
Profit	$258.90	$ 99.65	$251.90	$ 99.33

FIRM INCORPORATES

GRAND FORKS, N.D.—Chemical Solids, Inc. has filed articles of incorporation to manufacture and sell farm and industrial chemicals, listing $50,000 capitalization. Incorporators include Alan J. Twomey, Paul B. Kampf and Frank G. Rumreich, all of Grand Forks.

Nine Year Battle Against Sugar Beet Leafhopper Greatly Reduces Infection

SAN FRANCISCO, CAL.—Nine years of sustained attack directed against sugar beet leafhoppers in the San Joaquin Valley have reduced annual populations to the extent that damage from the virus carried by the leafhoppers affects less than 1% of susceptible crops, according to Robert W. Harper, chief of the bureau of entomology, California Department of Agriculture.

The department, through a beet leafhopper field office in Coalinga, Fresno County, has carried on the campaign with the cooperation of county agricultural commissioners, sugar beet growers, tomato associations, and other interested agricultural groups.

The work has involved the annual application of a series of four sprays commencing in the fall and extending through the winter and spring seasons.

Surveys this year indicate that remnant populations surviving the various spray treatments have migrated from the foothill breeding grounds and have spread over the floor of the San Joaquin Valley. Preliminary crop surveys also show that the surviving hoppers are few, and that growers once more can anticipate that losses of crops due to beet leafhoppers will be negligible.

The pests carry "curly-top" disease which affects sugar beets, tomatoes, melons, flax, beans, potatoes and other susceptible vegetable crops. The plants are infected with the curly-top virus as the insects light on them and feed following their flight from over-wintering areas in the western foothills of the San Joaquin Valley.

Prior to 1943, the battle against the hoppers was waged entirely by the sugar beet growers association. The State Department of Agriculture got into the campaign that year and stepped up the effort in 1950, when the annual outbreak reached a serious peak and many tomato growers lost their entire crop. Damage that year from curly-top disease in the counties of Tulare, Merced, Fresno and Madera was estimated at $6 million.

The value of the crops protected each year by the department's campaign is estimated at $100 million.

The total cost of the campaigns to the state from 1950 to 1959 has exceeded $2 million, the annual cost representing less than one-fourth of 1% of the annual value of the crops protected from curly-top virus. It is estimated the yearly campaigns against the hoppers result in savings of $19 million to growers of crops which otherwise might be damaged severely.

The battleground each year includes about 250,000 acres of rangeland extending from the Tehachapi Mountains to the Delta area of the Sacramento Valley.

The campaigns are opened in the fall with the application of insecticide sprays by aircraft. The insects concentrate in the fall on Russian thistle plants. All Russian thistle areas are treated with the death dealing material which, however, has no effect upon native vegetation or other animal life. It kills leafhoppers, and leafhoppers only, for all practical purposes.

The surviving hoppers move to the breeding grounds in the foothills in the late fall. They feed on annual grasses which spring up after the first fall rains. The hoppers in the breeding grounds are sprayed from ground rigs, each one carrying 100 gal. of insecticide.

Following each application of insecticides, a count is made of surviving insects to determine the extent of the total number killed. After the insects have migrated into the valley, another count is made in crop areas, and a third and final estimate is made through a survey of the actual incidence of the disease in the cultivated areas.

Although good control of the pests has been achieved in recent years, Mr. Harper does not anticipate that there will ever be a year when the campaign to suppress the hoppers can be dropped entirely.

While there is good control of beet leafhoppers in the San Joaquin Valley, the situation is not as favorable regarding the same pest in the Imperial Valley. The year-around production of sugar beets in the Imperial Valley provides a continuing source of insect reproduction. A summer period of no beet growing, a weed elimination program and an emergency state-county spray program on remaining weed hosts has served to reduce the populations of the hoppers, but has not brought about control comparable to that achieved in the San Joaquin Valley.

Mr. Harper and his associates believe that there is some undetected source of reinfestation outside of the Imperial Valley which will continue to aggravate the problem until discovered. In 1956, leafhopper losses to miscellaneous crops in the Imperial Valley were estimated at $7 million. Losses have been relatively light since then, but still are higher than the rate recorded for the San Joaquin Valley.

Oklahoma Company Announces Sale Plans

OKLAHOMA CITY, OKLA.—An order by the U.S. District Court Judge, Stephen S. Chandler, was filed today authorizing Nichols Seed & Fertilizer Co. to sell its farm fertilizer plant southwest of Oklahoma City by sealed bids. Bids must be filed in the U.S. District Court Clerk's office by 11 a.m. Aug. 10, 1959.

The bids on the Nichols plant, one of the largest fertilizer producers in Oklahoma, will be opened at 2 p.m. the same day and the plant sold, subject to approval and confirmation by the court.

Earl Nichols, president, said this is the first step in the company's reorganization plan to get out of the farm fertilizer business and devote full time to the distribution and production of seeds, agricultural chemicals and allied merchandise for farms and homes.

Four Join California Agricultural Aircraft Group

FRESNO, CAL.—Four new members have joined the Agricultural Aircraft Assn., Inc. of Fresno, Cal., according to Wanda Brandstetter, executive secretary.

Two are voting members and include Aero Atlas, Inc. of Red Bluff, represented by Warren H. Bullock, president, and Valley Flying Service of Fresno, E. C. Gabbert and R. A. Divine, partners.

The out-of-state members are Mid-Continent Aerial Sprayers, Inc. of Hayti, Mo., represented by Richard Reade, president; and Mangum Flying Service of Bay City, Texas, John J. Mangum, Jr., owner.

GRAIN OUTPUT DROPS

BOISE, IDAHO—Idaho's estimated grain harvest this year is expected to dip slightly from last year's production of 42,492,000 bu. The U.S. Department of Agriculture Crop Reporting Service has estimated the 1959 crop at 40,423,000 bu. The estimate is slightly above the 10-year mean, however, by about 40,000 bu.

Minnesota Meeting To Feature Speakers, Demonstrations, Panels

ST. PAUL, MINN.—The University of Minnesota will be the site for a summer educational meeting of agricultural leaders, farmers and representatives of the fertilizer trade from a half dozen or so upper midwestern states Aug. 28-29.

Paul Lindholm, president of the Minnesota Ammonia Dealers group, will preside over the meeting. Minnesota Anhydrous Ammonia Dealers Assn., the institute of agriculture at the University of Minnesota, and the Agricultural Ammonia Institute are joint sponsors. Dr. W. P. Martin, head of the soils department at the university will welcome the visitors and will preside at one of the sessions. Jack F. Criswell, executive vice president of the AAI, will preside at the final session.

Test spots demonstrating rates of ammonia and other nitrogen materials on corn and grass crops will be discussed on the program. The discussions will be taken from papers given by agronomists and soils specialists of educational institutions and commercial fertilizer industries.

S. C. Smith of Uvalde, Texas, president of the AAI, will start proceedings with a talk on "The Nitrogen Picture."

The remainder of the first day program follows:

"The Tools—Soils—Crops—Fertilizers," Dr. John Murdock, soils department, University of Wisconsin, and Richard Rust, soils department, University of Minnesota.

"Moisture and Its Relationship to Yields and Fertilizer," Dr. R. E. Holt, ARS-USDA.

"The Nitrogen Cycle," Dr. Ed L. Schmidt, soils department, University of Minnesota.

"Nitrogen Carry-Over — Residual Losses," Dr. W. P. Martin, soils department, University of Minnesota.

"Nitrogen in Over-All Soil Management," Dr. Paul Burson, soils department, University of Minnesota.

"Nitrogen Only? For How Long?" Dr. A. C. Caldwell, soils department, University of Minnesota.

"Nitrogen on Pastures and Hay," Lowell Hanson, extension soils specialist, University of Minnesota.

"Some Misconceptions about Nitrogen on Corn," Dr. John MacGregor, soils department, University of Minnesota.

"Why I Use Ammonia in my Farm Operations," Les Boler, farmer, Truman, Minnesota.

Field tour to demonstration plots in St. Croix area, followed by outdoor barbecue.

The Saturday program includes:

"Keeping the Customer Sold through Service," Dr. R. W. Scanlan, Phillips Petroleum Co.

"Ammonia Equipment," Clarence Hansen, agricultural engineering department, Michigan State University.

"My Plowdown Program," Ole Palmquist, farmer, Milbank, S. D.

"The Future of Nitrogen Fertilizer," John Wiley, Central Farmers Fertilizer Co., St. Paul, Minn.

"The XYZ's of Nitrogen Use in the North Central States," a panel: moderator, Dr. Leo Orth, Sinclair Petrochemicals, Inc.; Les Boler, Ole Palmquist, Clarence Hansen, John Murdock, Lowell Hanson and Curtis Overdahl.

New Lime Firm

LITTLE ROCK, ARK.—The War Eagle Lime Co., Inc., Huntsville, Ark., has filed articles of incorporation with the office of the Arkansas secretary of state here. Incorporators were Robert Lee Yarbo, John E. Yarbo and Hubert Ernest Yarbo, all of Huntsville. John E. Yarbo was named as the firm's agent. Papers of incorporation said the firm was being formed to operate a lime, fertilizer and bulldozer work business.

1959 Round Table To Cover Current In-Plant Problems

WASHINGTON — An interesting instructive program of items that concern current problems in the processing of granulated and conventional fertilizers constitutes the agenda for the 1959 fertilizer industry round table, according to Dr. Vincent Sauchelli, chemical technologist of the National Plant Food Institute, chairman of the round table.

This year's theme is "Practical Problems in Processing Fertilizers," he says. Featured will be a detailed description of two plant processes from raw materials to shipment. Two well-known experienced operators will each tell about their layouts, process, mistakes to avoid, good features to accentuate and will be prepared to answer pertinent questions. Plenty of time will be provided for question and answer periods.

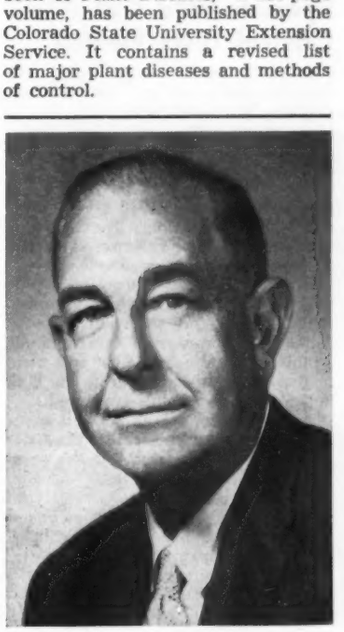
Problems associated with the manufacture of conventional type fertilizers will have a place on the program this year. Statistical quality control will be discussed by two noted statisticians featuring theoretical descriptive and practical applied phases of the subject. A subject of universal interest at present is preneutralization. A symposium on the subject will be presented.

Registration will begin on Nov. 3 between 7 and 9:30 p.m. at The Mayflower Hotel. Those who can are urged to register at this time. Registration will continue at 8:30 a.m. Nov. 4.

A detailed program will be released next month, Dr. Sauchelli says.

PLANT DISEASE HANDBOOK

FORT COLLINS, COLO. — The third edition of the Colorado Handbook of Plant Diseases," a 230-page volume, has been published by the Colorado State University Extension Service. It contains a revised list of major plant diseases and methods of control.



Theodore I. Stone

NEW VICE PRESIDENT—Theodore I. Stone has been made vice president and treasurer of Wilson & Geo. Meyer & Co., western distributors of agricultural and industrial chemicals and plastics, Jeffery W. Meyer, president, announced. Mr. Stone, who has been with the company for 21 years, has previously served as an accountant, senior accountant and treasurer. As vice president and treasurer he will be manager of the newly organized administrative and finance department of the firm and its affiliated companies. A native of Illinois, Mr. Stone was graduated from the University of California in accounting. Prior to joining the Meyer firm in 1938, he was associated with the San Francisco office of the First Boston Corp.

P. W. GULL (photo above), manager of new agricultural product development for Spencer Chemical Co., checks his notes while observing control obtained from the firm's experimental wild oat herbicide "Carbyne." The demonstration plot, near Fargo, N. D., was the scene of a gathering of agricultural authorities who were shown some of the preliminary results. In the lower photo, a group of those present closely scrutinize one of the test plots.

Spencer Wild Oat Control Tests Viewed

FARGO, N.D. — Agricultural authorities concerned with the wild oats problem gathered here July 20, to view experimental test plots aimed at testing a new herbicide for the control of this weed pest.

The herbicide involved in the experiments is Carbyne (trademark), a development of Spencer Chemical Co., Kansas City, Mo. Discovered in the Spencer biological research laboratories, the product underwent a four year period of greenhouse and limited field testing before the launching of a full-scale test program this summer. In this program nearly 8,000 test plots in five separate locations in the U.S. and Canada are being evaluated.

According to Proctor W. Gull, manager of new agricultural product development for Spencer, "At the present time we believe that Carbyne shows promise in the control of wild oats in wheat, barley, sugar beets and flax. However, no decisions will be made as to its commercialization, until we are entirely sure that it is a practical and worthwhile herbicide."

He indicated that these decisions would probably come sometime late this fall following a complete analysis of this summer's testing program.

Carbyne is being tested as a post-emergence herbicide. Extensive greenhouse research has indicated that it controls wild oats by inhibiting growth of the weed plant. In some cases, this growth inhibition is said to be sufficient to kill the wild oat plant or, in others, it can retard growth to the extent that the crop being grown will crowd it out.

Dr. Gull said that the plots near Fargo represent one of five locations where Spencer is testing Carbyne this summer. The other plots include one at Park River, N.D., and three in Canada at Winnipeg, Edmonton and Regina. In addition, the new chemical has been furnished to a number of U.S. and Canadian experiment stations for testing.

Defoliant Use Increases in Texas

COLLEGE STATION, TEXAS — Because of the trend toward mechanical harvesting, the use of defoliants is rapidly increasing in the cotton areas of Texas.

More than 50% of the cotton may be harvested mechanically by 1960, according to Fred Elliott, cotton work specialist for the Texas Agricultural Extension Service. He says that when a farmer turns to mechanical harvesting it is necessary to learn how to defoliate properly. Results are affected by the time of day and the chemical used. Not all materials are effective under varying conditions.

In 1958 defoliants were applied to 37,885 farms in 62 Texas counties.

RICE WEEVIL APPEARS

DAVIS, CAL.—A new rice pest, the rice water weevil, has been found for the first time in California by W. Harry Lange and Albert A. Grigarick, University of California entomologists.

The Davis campus researchers found the weevil feeding in plots at the Rice Experiment Station at Biggs and in a nearby field. "We don't know yet how widespread the new pest is in the rice-growing areas, or how much damage it can do," Dr. Lange said. "In the southern U.S., the weevil is one of the most common rice pests, and often a major one. Both the larvae, or grubs, and the adults damage the rice plants. The larvae feed on the roots, pruning them off close to the crown, and the adults feed on the leaves, leaving slit-like scars."

The milky-white grub is from one-fourth to one-half inch long, while the adult is only one-eighth inch long and grayish brown with a darker area on the back. There are two generations of the pest a year in the southern states; the first one is more damaging to the rice plants, which are younger and more tender earlier in the season, said the Davis entomologist.

The rice water weevil also feeds on watergrass and other grasses and sedges growing in rice fields. It is found along the Atlantic seaboard up to Canada, although rice is not grown in most of that area.

South Carolina Annual Fertilizer Sales Top Previous Year's Total

CLEMSON, S.C. — Fertilizer sales in South Carolina for the year ending June 30, 1959 amounted to 890,302 tons or 21.5% more than in the similar period last year, reported B. D. Cloaninger, director, fertilizer inspection and analysis department, Clemson College.

The year-ago figure was 732,607 tons.

Most popular grades were 4-12-21 with 158,858 tons being sold, and 4-10-6, with 120,453 tons being sold.

COMPANY'S SALES RISE

LOS ANGELES—Sales of American Potash & Chemical Corp. for the six months ended June 30, 1959, were $27,715,232, against $23,658,273 in the corresponding period of 1958, Peter Colefax, president, announced. Net income for the first half of 1959 was $2,539,748, as compared with $2,200,555 for the same period last year. After deducting preferred dividend requirements, earnings were $1.07 per share on the 2,271,495 shares of common stock outstanding, as against 92¢ earned in 1958 on the 2,270,058 shares then outstanding.

DOCK FUMIGATION

WASHINGTON—A large wooden dry dock in the ship channel at Houston, Texas, is being fumigated under supervision of U.S. Department of Agriculture entomologists and insect control specialists to prevent spread of a destructive species of termite. The treatment began July 20.

The termite (Coptotermes crassus) has not previously been found in this country but is known to infest western Mexico, Honduras and Guatemala. USDA scientists say the termite is "potentially an exceedingly important insect pest." Closely related species of the insect cause millions of dollars in damage annually in the Canal Zone, Hawaii, and Australia. Like termites in this country, the imported pest has an ability to establish and maintain colonies without contact with the soil in situations where water is available. For this reason the termites have survived without difficulty in the floating dry dock.

Surveys by a USDA pest control team indicate that the termite infestation is confined to the dry dock and a nearby pier. The insects represent a potential hazard, however, because they form wings during a stage of their life cycle and may fly to surrounding areas.

The elimination of this single infestation is important for two reasons, according to the USDA pest control specialists: The insect could cause tremendous damage to wooden structures and trees in this country. Failure to eradicate the pest now might result in the need for widespread control and eradication programs in the future.

The huge dry dock in which the termites have made their home has been towed to many ports of the world, including several in the Caribbean Sea, and was used for ship repair during World War II. It is valued around $1.5 million and was purchased from the U.S. Navy by a ship-building firm.

Mid-South Farmers' Cotton Crop Good; Insects Still Active

MEMPHIS, TENN.—As the month of July drew to a close, farmers in the mid-south area were looking forward to an early harvest of a good cotton crop.

Extension reports from Arkansas, Mississippi, Missouri and Tennessee show the weather has been just right for development of the cotton crop this year. Indications are that many farmers will begin picking cotton somewhere around the last two weeks in August. Such a date is early for the crop, and if there are no rains to damage it during the opening period, a better price is expected. If conditions continue and there is a dry fall, most of the crop may be picked before the first frost can damage its quality.

Crop conditions in Dyer County, Tenn., were described by Agent J. R. Barrett as "the best I have ever seen." He said corn crops are especially outstanding, with some growers expecting to average 45 bu. per acre on the 52,000 acres planted in corn in the county. The cotton crop was described as "exceptionally good."

In Mississippi extension officials stated that although crops are described as "good to excellent" some areas are seriously in need of rain. Cotton is beginning to cut out in some areas, and where this is happening insect control measures are being taken to protect already set bolls. Soybeans also were said to be "good to excellent" and corn ranged from good in some areas to poor in others. Generally pastures were in good condition, and some cattlemen are now fallowing land for early planting of winter grazing crops.

Arkansas cotton was reported as fruiting heavily. State entomologists reported overwintering weevils were continuing to emerge in some cotton fields, but emergence was not heavy except in certain areas of southwest Arkansas. Aphid populations and spider mite activity were on the increase, and white flies were appearing in a number of fields. As reported by state entomologists, the percentage of fields infested with boll weevils ranged from 40 to 80%.

Acreage for Certain Crops Increased in California

SACRAMENTO — The California Department of Agriculture in its July field crop report says acreages are increased this year for corn, rice, cotton, sugar beets and alfalfa hay.

Three crops—barley, cotton and alfalfa—comprise 57% of the 6,659,000 acre total.

The barley harvest produced better yields than predicted and resulted in a total of 1,661,000 tons.

The corn crop is forecast at 525,000 tons, up 8% from last year. Corn acreage is 250,000 as compared with 238,000 acres in 1958.

Firm Purchased

ST. ANTHONY, IDAHO—Purchase of the Jack Thomas Co. of this city by Ray and Orme Jorgenson became effective July 1. The firm handles grain, feeds, coal and fertilizers. Mr. Thomas purchased the business, formerly Miller Bros., about three years ago.

SPIDER MITE TESTS

PUEBLO, COLO.—Test plantings of specially treated field corn seed will be made in Pueblo County to ascertain whether red spider mites can be controlled. Arrangements for the tests were made by Gordon Mickle, extension entomologist from Colorado State University; Robert Seeberry of Boulder, representative of the American Cyanamid Co., and M. V. Haines, county agent. The seed was treated with Thimet.

RENTAL lawn rollers, spreaders and seeders are displayed outside of the C & P Garden Center in Madison, Wis.

Wisconsin Firm Builds To $1 Million Gross

By Al. P. Nelson
Croplife Special Writer

The C & P Garden Center, 3830 Atwood Ave., Madison, Wis., attains an annual volume in excess of $1,000,000.

This imposing record has been achieved within a span of four years by Carl Payne, owner, and 12 employees. The store sells fertilizer, feed, seed, lawn furniture, plants, shrubs, insecticides, sprayers and many other items. The store abounds in well arranged mass displays, there are numerous selling signs, and an employee bonus and profit sharing plan sparks in-store selling. All these contribute much toward the outstanding annual volume.

Mr. Payne bought the land on which his store stands for $30,000 four years ago, and erected a $50,000 building on it. At the time friends and neighbors gasped and predicted the business wouldn't succeed. Mr. Payne aimed for $250,000 in the first year. He did over $300,000.

"The garden supply business is growing fast," Mr. Payne says. "I am confident we are going to hit two million gross before very long. All our planning is toward that goal."

Important in the Payne merchandising plan is the equipment rental program. The garden tillers, which sell from $120 to $170, are rented on the basis of $5 for the first five hours and $7.50 for a 10-hour day. Even if a man wants the tiller for more than one day, he must bring it back to C & P every day for checkup. This policy has kept repair costs very low.

Sometimes tiller renters will share a tiller with a neighbor, thus splitting the $7.50 daily rental charge. Mr. Payne has 25 of these tillers available for rental, and in spring and fall all of them are usually out to customers.

"Many of the rental customers buy the tillers after using them," states Mr. Payne. "They find how handy they are, how easy to operate. We don't demonstrate new tillers. We only rent used ones. Customers can either buy the rental tillers or buy new ones. We are now selling about 250 tillers a year."

Mr. Payne has a fine service shop for garden tillers, power mowers and other equipment. That is one reason why tiller sales are high—customers know they can get excellent service at C & P. Mr. Payne does not rent power mowers. He says that service costs on both rotary and reel type are too high. But his shop does service power mowers for customers.

During the winter Payne will store garden tillers and power mowers free of charge for custom-

(Turn to GARDEN CENTER, page 14)

Soil Testing and Mapping Service Pays Off in Big Dividends for Indiana Dealer

You have to use a different approach to sell fertilizer to various farmers, because each has different crop objectives and also varying soil conditions.

So says Ralph Snelling, owner Snelling Farm Service, Boswell, Ind., who has registered a surprisingly large annual increase since 1954, the year he started in business. In other words, Mr. Snelling tries to custom-fit each farmer when it comes to fertilizer.

Take, for example, the customer who comes to see Mr. Snelling and wants to talk about the amount of fertilizer needed for the corn crop. Mr. Snelling does not use high pressure methods in selling fertilizer. He asks the farmer, "How much corn do you want to raise per acre —60, 80, 90 or 100 bu.?"

The answer the farmer gives permits Mr. Snelling to work out the fertilizer recommendations, contingent upon crop history, soil testing and so on.

Or, perhaps a tenant farmer comes in and asks "How far can I go in fertilizing the crops I grow and come out economically if I leave this farm in two or three years?"

Of course, in working out fertilizer recommendations for any farmer in this area, Mr. Snelling is helped if he knows what the soil test recommends, and if he has a soil map of the farmer's fields. Therefore, he operates his own soil testing laboratory, and he will also map farmers' fields at a cost of 60¢ per acre.

Mr. Snelling is well qualified to do soil testing and mapping. He has a master's degree in agronomy and for several years was with the USDA in Oklahoma, Illinois and at Purdue. He tries to sell the farmer on the idea that if he has his farm soil mapped, then he has a soil history of his land which can be used for many years. Along with this soil mapping he likes to get a complete history of cropping for past years.

When Mr. Snelling gets through soil mapping a farmer's land, he presents the customer with a stapled soil test survey report. Such a report contains three color coded maps for each field, one for phosphate, one for potash and one for lime requirements. Depending on how many fields are mapped, the stapled report may run from 20 to 50 pages or more.

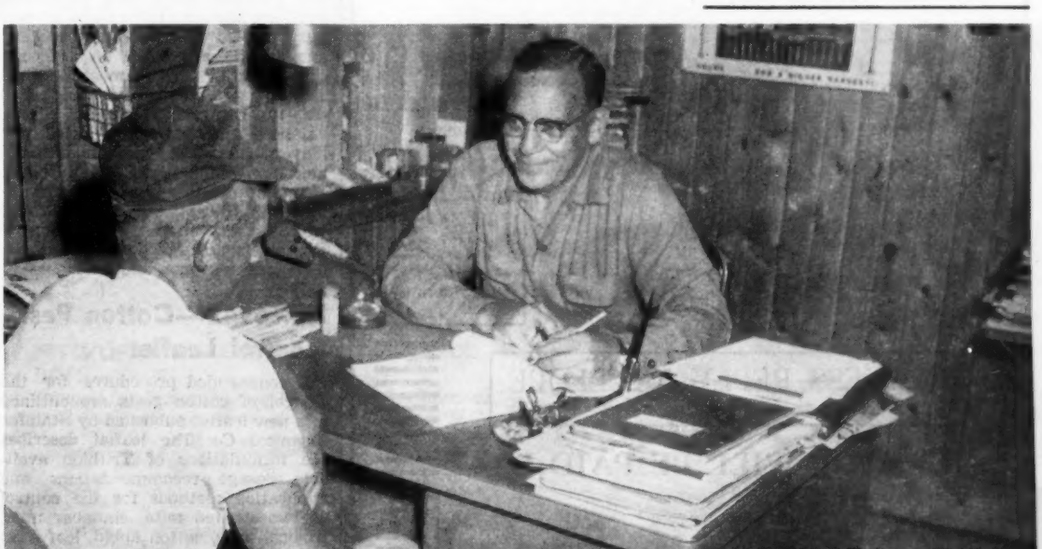
The more soil mapping which Mr. Snelling does in this area, the more customers recommend the service to their neighbors. Farmers who get and use such soil map reports can compare yields, and gradually bring their lands up to full fertility.

"Certainly this involves a lot of work on our part," says the Indiana dealer, "because we like to take all the soil samples, about 11 to a 40 acre field. But it is a very effective way to sell fertilizer. Many farmers who come into our office to talk about fertilizer, bring these reports with them. Since our office also has a duplicate, we can quickly get down to facts about the current growing season and fertilizer requirements."

The firm tests about 7,500 samples of soil annually, and soil maps from 5,000 to 6,000 acres per year. Mr. Snelling's work brings him into contact in the field with hundreds of farmers. His is an indirect approach to selling fertilizer, but for him it works better than the "hard sell" approach.

Farmers were slow to take to soil mapping, a new idea here, but more have been won over to its value every year. Some farmers start out by having a few fields mapped, and then extend the program each year. As the mapping continues year after

(Turn to SNELLING, page 14)



RALPH SNELLING, owner of Snelling Farm Service, Boswell, Ind., talks to a customer about soil tests and soil mapping. According to Mr. Snelling, a great deal of his selling is done with the help of the tests and mapping.

WHAT'S NEW

IN PRODUCTS · SERVICES · LITERATURE

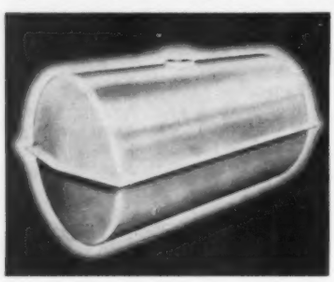
To obtain more information about items mentioned in this department simply: (1) Clip out the entire coupon in the lower corner of this page. (2) Circle the numbers of the items of which you want more information. Fill in the name and address portions. (3) Fold the coupon double with the return address portion on the outside and fasten the edges with a staple, cellophane tape or glue. (4) Drop in the mail box.

No. 6934—Lightweight Pallets

Lightweight "Sak-Pak" expendable pallets for use for loading chemicals, lime, fertilizer and other bagged products, have been introduced by Calco Supply Co. The firm has three sizes of pallets available. The pallets are made of corrugated paper reinforced with Kraft veneer board. Each can carry approximately 4,000 lb. and the pallets can be stacked three high. They weigh only 5 lb. each. For details about the product, check No. 6934 on the coupon and mail.

No. 6937—Molded Tank

A molded fiber glass tank for use in spraying or storing corrosive liquids has been announced by the Molded Fiber Glass Body Co. Designed in a cylindrical shape, the 200-



gal. tank is said to resist corrosion and weathering. It is recommended for use as a spray tank for insecticides and liquid fertilizers, or as a storage tank for chemicals. The tank is easy to clean, the company said, and is lightweight and impact resistant. It is 58 in. long with a 32 in. diameter. Available in a selection of colors, the tank is translucent so that the liquid is always visible. For more information check No. 6937 on the coupon and mail to this publication.

No. 6930—Granular Herbicides

Amchem Products, Inc., is offering two new 2,4-D granular herbicides for control of water weeds. Marketed under the trade names "Aqua-Kleer 10" and "Aqua-Kleer 20," the 10 and 20 formulations represent the per cent by weight of 2,4-D acid equivalent. Aqua-Kleer 20 is for bulk use. According to the company, the concept of this control is easier application, slow release of the active ingredient and coordination between the treatment and rapid root growth. Aqua-Kleer 10 comes in 5 lb. canisters and Aqua-Kleer 20 comes in 50-lb. bags. For details check No. 6930 on the coupon and mail.

No. 6933—Fruit Insecticide Folders

Two folders which describe use of Sevin insecticide on fruit are now available from Union Carbide Chemicals Co., division of Union Carbide Corp. One folder gives details about application of Sevin on apples, pears and peaches, and the other one covers grapes. Application rates and directions are included. Copies of the folders may be obtained by checking No. 6933 on the coupon and mailing to this publication.

No. 6936—Sales Booklet

A brochure entitled "14 Tested Ways to Increase Sales and Cut Sales Cost," has been announced by Perrygraf Corp. Seventy-six pictures and 122 case histories are used to show "how to pep up the whole sales program by using slide-charts to put product facts at the fingertips," com-

14 TESTED WAYS TO BUILD SALES and CUT SALES COST
For the man who wants to guarantee his company's future and his own
PERRYGRAF CORPORATION

pany literature said. One slide-chart, distributed by Phillips Petroleum, enables one to see instantly what fertilizer is needed to replace elements removed from the soil by any one of 30 crops. Other slide-charts show egg cost calculations, feed requirements, how to check rate of fertilizer application, equipment and floor space necessary for different numbers of chickens, dosage for disease prevention and many other farm problems. The booklet and other materials are available free by checking No. 6936 on the coupon and mailing.

No. 6939—Display Units

Salesroom wall type merchandisers and gondolas have been announced by Shure Manufacturing Corp. Heavy-duty steel uprights and brackets, available in a number of sizes, are quickly adjustable to meet seasonal requirements, the company said. Wall displays can include lettered plastic valances and large perforated display panels which accommodate numerous combinations of displays. Planning and layout service is available from Shure Manufacturing Corp. to assist in the best utilization of available space. For details check No. 6939 on the coupon and mail.

No. 6942—Cotton Pest Control Leaflet

Recommended procedures for the control of cotton pests are outlined in a new leaflet published by Stauffer Chemical Co. The leaflet describes the formulations of Trithion available, dosage recommendations and application methods for the control of two spotted mite, cinnabar mite, tropical mite, cotton aphid, leafworm and leaf perforator. Copies are available without charge by checking No. 6942 on the coupon and mailing to this publication.

No. 6938—Fly Killer

Camp Chemical Co. announced a new Diazinon Fly Bait Killer. In powder form, the product attracts flies and kills them, the company said. It is especially designed for outdoor use. The company guarantees a 98% fly reduction each day of use. The package is ready for use merely by sprinkling on the ground or horizontal surfaces. The packages come 12 to the case. For information on this fly killer check No. 6938 on the coupon and mail to this publication.

No. 6931—Movie on Urea

"Greener Pastures," an educational movie which stresses the value of urea for supplemental nitrogen applications to increase agricultural yields and efficiency, has been announced by E. I. du Pont de Nemours & Co., Inc. Filmed mainly in the Mid-Atlantic and Midwest states, the 16 m.m. color, sound movie compares old farming methods with those of the modern farmer who employs scientific soil-testing and fertilization. Benefits of pasture-building to dairymen and cattlemen are also cited in illustrations of increased yields resulting from supplemental nitrogen applications. For information on obtaining a print of the film, check No. 6931 on the coupon and mail.

No. 6941—Feed, Fertilizer Body

A combination bulk feed and fertilizer body called the "Feedilizer," has been introduced by Simonsen Manufacturing Co. The 3,800 lb., all-steel body can give the dealer an extra fertilizer spreader during the rush season and it also can allow the dealer to expand his operation from the relatively short fertilizer spreading season to a full 12 months by adding bulk feed delivery, the company said. The Feedilizer is two complete bodies in one, with a total capacity of 261 cu. ft. The two compartments will hold 8½ tons of fertilizer or 5.2 tons of feed. This allows splitting a load into two separate orders of fertilizer at a time or separate feed orders. One compartment can be filled with fertilizer and the other with feed. The unit has all the features of a bulk feed body and a spreader. Its feed delivery auger will reach 21 ft. bins, will turn 360° and will deliver feed at the rate of 800 lb. a minute. The fertilizer spreader unit is designed to spread accurately down to

75 lb. an acre. Because its apron is run by a wheel drive, the truck can be operated in all gears or with a two-speed axle without affecting the rate of fertilizer spread. Stainless steel is used at all critical points to reduce corrosion. For more information, check No. 6941 on the coupon and mail.

No. 6935—Sprayer Tanks

Hanson Equipment Co. is offering a complete list of Fiberglass sprayer tanks ranging in size from 50 to 500 gal. and in a variety of shapes to suit individual needs. According to the company, the tanks are impervious to farm chemicals and rust, and will withstand sharp blows without breaking or denting. Translucent tank walls allow the user to view the

Send me information on the items marked:

- ☐ No. 6930—Granular Herbicides
- ☐ No. 6931—Movie on Urea
- ☐ No. 6932—Nylon Spray Nozzles
- ☐ No. 6933—Fruit Insecticide Folders
- ☐ No. 6934—Lightweight Pallets
- ☐ No. 6935—Sprayer Tanks
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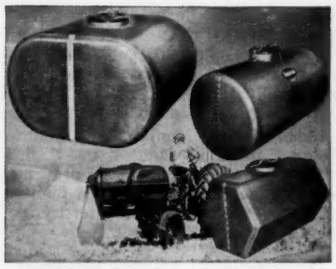
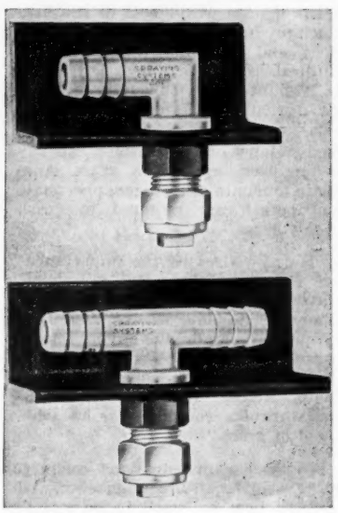


liquid level at all times. A sight gauge for reference is on either end. Complete information about the tanks can be obtained by checking No. 6935 on the coupon and mailing to this publication.

No. 6932—Nylon Spray Nozzles

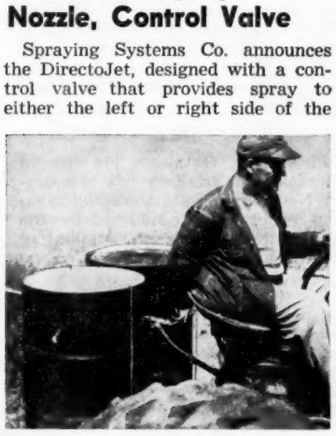
A new type of Tee-Jet spray nozzle has been introduced by Spraying Systems Co. which permit the fabricating of a spray boom from an angle-iron instead of piping. The nozzles are mounted in holes drilled in an angle-iron at desired intervals and the hose shanks are connected by hose to make up the complete boom. The nozzles are supplied with



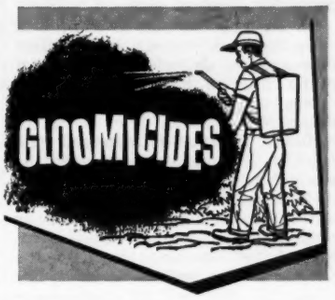
double and single hose shank bodies for inside and end positioning on the boom. The complete nozzle consists of hose shank, nozzle body, cap and strainer body made of nylon, with strainer screen in stainless steel and orifice tips in either aluminum or stainless steel. The assembly is held in position on the angle-iron with a lock nut. For details, check No. 6932 and mail.

No. 6940—Spray Nozzle, Control Valve

Spraying Systems Co. announces the DirectoJet, designed with a control valve that provides spray to either the left or right side of the



tractor, or to both sides at one time as well as off-and-on control. The entire sequence of operations is controlled by the operator without leaving the tractor seat, the company said. Because the spray can be shut off to either right or left, the spray can be set in the down-wind direction on windy days. This control feature is also of advantage when spraying near fence rows or buildings. The unit is easily mounted on a tractor, with the control handle positioned convenient to the operator, company literature explained. Five different capacity ranges are available. The DirectoJet may be removed and used as an auxiliary spray gun. Check No. 6940 for details.



Sportsman: "See that big fellow playing fullback, I think he'll be our best man next year."

Co-ed: "Oh darling, this is so sudden!"

★

Some girls think the new bathing suits are indecent; others have good figures.

A Texan stopped for speeding in his Rolls Royce was quizzed by the arresting officer when he checked the man's license.

"I see here you're not supposed to drive without glasses," the gendarme said.

"That's right, son!" exclaimed the Texan, "but who needs glasses? I had my windshield ground to my prescription."

★

The will of the wealthy, but eccentric, man was being read and the relatives all listened expectantly. Finally the lawyer said, "And to my nephew, Charlie Jones, whom I promised to remember—'Hi there, Charlie'!"

★

"Dad, we learned in school today that animals get new fur coats every year."

"Quiet! Your mother might hear you."

★

Just in case you're interested in the latest variation of the "later, alligator" routine, it runs like this:

"See you tonight, satellite."

"In the void, asteroid."

★

He: "I'm thinking of asking some girl to marry me. What do you think of the idea?"

She: "It's a great idea, if you ask me."

★

Tommy: Mother, are there any trucks in heaven?

Mother: I doubt it, son. They have to be driven by truck drivers.

★

Smith was sitting down to breakfast one morning when he was astounded to see an announcement of his death in the newspapers.

He rushed to the phone at once to call up his boss.

"Hello," he shouted. "Did you see the announcement of my death in the newspapers?"

"Yes," the boss replied, "where are you calling from?"

★

A wedding ring may not be as tight as a tourniquet but it certainly stops the circulation.

★

Upon due reflection, a rural school teacher decided to give full credit to a pupil for his answer to an arithmetic problem.

The question: "If your father sold 1500 bu. of grain for $2 bu., what would he get?"

The answer: "A new car."

Books on Pesticides

THE GARDENER'S BUG BOOK (1956)

Dr. Cynthia Westcott

The Complete Handbook of Garden Pests and their control. Information, scientifically accurate but easy to read on 1,100 insects, mites and other animal pests that attack trees, shrubs, vines, lawns, flowers, fruits and vegetables in home gardens. Illustrations in full color. Control measures combine the latest in chemical developments with time-honored cultural measures. Helpful to all who serve the general public and to truck farmers and fruit gardeners. 579 pages, cloth bound $7.50

HANDBOOK OF AGRICULTURAL CHEMICALS —Second Edition

Lester W. Hanna, Agricultural Enterprises, Forest Grove, Ore.

As the title implies, this book contains broad information and tables on not only the chemical products themselves, but also on toxicity, residues, registration, terminology and emergency treatments. A fold-out chart gives compatibility data on numerous materials for formulators. Information on fertilizers includes soil elements, trace minerals, and application techniques. Descriptive material is also presented on fumigants, fungicides, herbicides, systemics, growth modifiers, livestock chemicals, rodenticides, and antibiotics. Information on materials and techniques is written fully with illustrations and tables. 490 pages..... $5.95

INSECT PESTS OF FARM, GARDEN and ORCHARD—Fifth Edition (1956)

Leonard M. Peairs and Ralph H. Davidson

A standard text for 44 years. Includes insects affecting grasses, grains, cotton, legumes, vegetables, flowers, fruits, stored products, household goods and domestic animals. Contains a new chapter on insecticide formulations, spray mixtures, application equipment, etc. Material on forty new pest species added, including drastic changes in the illustration. 661 pages $8.50

DDT and NEWER PERSISTENT INSECTICIDES

T. F. West and G. A. Campbell

The first and major part of book is devoted to the physical and chemical properties, manufacture, formulation and applications of DDT. The second part deals with other chlorinated hydrocarbons whose insecticidal properties have been discovered recently and compares these new insecticides with DDT. The preparation of aqueous suspensions, solutions, emulsions, and dusts containing DDT, the compatability of DDT with other insecticides, fungicides and additions are covered in detail. Contains dozens of tables on the solubility of DDT in various solvents, the catalytic activity of accessory substances in the presence of DDT, analogues of DDT, the comparative toxicity, hydrolysis and solubility of DDT analogues, the toxicity of DDT for almost all important insects, etc. Many illustrations $8.50

PESTS OF STORED GRAIN AND GRAIN PRODUCTS

Richard T. Cotton, Stored Product Insect Section, U.S. Department of Agriculture, Washington, D.C.

Dr. Cotton's valuable book is full of practical up-to-date information on the problems of insect and rodent contamination. Some of the main topics covered are: methods of detecting contamination in cereal from rodents, birds and insects; prevention and control of insect infestation in grain; new methods of storage; methods of sanitation in grain storages and processing plants; the latest information on fumigation; heat sterilization; and protection of stored seed. This book is concise, readable, completely indexed and includes over 100 figures and illustrations. 306 pages, 8½x5½", photo offset, illustrated, cloth bound.... $4.00

METHODS OF TESTING CHEMICALS ON INSECTS—Vol. I

Harold H. Shepard, chief, Agricultural Chemicals Staff, Commodity Stabilization Service, U.S. Department of Agriculture, Washington, D.C.

This is Vol. I of a proposed three-volume study. It describes methods of studying the effects of chemicals on the physiology of insects. Also covered are general techniques for applying chemicals to insects. It includes laboratory screening methods for determining the killing efficiency of insecticidal sprays, dusts and fumigants. Its 14 chapters are authored by prominent entomologists from USDA and State Experiment Stations. 355 pages; 8½x5½" photo-offset, cloth bound $5.00

THE CHEMISTRY AND ACTION OF INSECTICIDES

Harold H. Shepard, Entomologist, U.S. Department of Agriculture, formerly Associate Professor of Insect Toxicology, Cornell University.

Treats the chemistry of insecticides, the history of their use, their commercial importance here and abroad, the nature of the major uses, the influence of environment on effectiveness. Materials are arranged according to their chemical relationships. Two chapters relating to organic compounds largely new as insecticides. Illustrative data in form of tables, and a convenient appendix of equivalents arranged for practical use in the field. 504 pages..... $8.00

ADVANCES IN PEST CONTROL RESEARCH—Vol. 2

Edited by R. L. Metcalf, University of California, Citrus Experiment Station, Riverside, Cal.

This book, an annual series, treats pest control as a distinct discipline, discussing chemical, physical and biological methods from the common viewpoint of the basic principles involved and applying them to the control of weeds, fungi, bacteria, insects—all organisms which compete with man for his food supply, damage his possessions, or attack his person. Each annual volume contains chapters contributed by outstanding scientists having intimate knowledge of various pertinent topics within the field, presenting not only comprehensive reviews of recent advances but also critical evaluation of new developments and concepts. This volume continues the same plan which won immediate acceptance for the series. In eight chapters, a group of experts present and interpret recent advances in subjects ranging from the innate toxicity of fungicides to isotope dilution techniques and the spread of insecticide resistance, 1958; 434 pages, 110 illustrations, 43 tables $12.50

INSECT, FUNGUS AND WEED CONTROL

Dr. E. R. de Ong

The information is grouped according to field of application rather than to chemical composition or nomenclature. Chapters on insecticide label, seed disinfectants, herbicides, forest insects and diseases, livestock insects, and the pests found in household and industry. Fumigation of warehouses, residual sprays and preservatives for fruits, vegetables and wood products are covered. An up-to-date guide on pest control with the needs of operators, agricultural and structural specialists carefully considered. Shippers and warehouse personnel will find the book useful $10.00

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FARM SERVICE DATA

EXTENSION SERVICE REPORTS

Nevada farmers were strongly urged to make more and better use of commercial fertilizers by Dr. V. E. Spencer, research chemist with the University of Nevada College of Agriculture at Reno.

"Nevada soils are particularly deficient in phosphate and nitrogen, and soils on which crops such as potatoes are grown also require more potash," Dr. Spencer said.

Dr. Spencer said that although fertilizer consumption in Nevada had gone up from 3,500 tons in 1954-55 to 22,000 tons in 1957-58, many farmers were still far from reaching the best potential use of fertilizers.

Dr. Spencer was reporting on fertilizer trials conducted in various parts of Nevada on crops ranging from small grains and hay to potatoes. "As one example," he said, "tests conducted in Douglas County indicated decided phosphate deficiency. It was shown that plots seeded with clover without phosphate fertilizer remained bare of clover growth, whereas those which received phosphate showed excellent clover growth."

For small grains Dr. Spencer highly recommended at least 70 lb. each of phosphate and nitrogen for increased yields. He pointed out that if alfalfa or other legumes were to follow a grain crop, appreciable profit through the residual effects of the phosphate might be expected. "However," he stressed, "even greater profits may be realized by applying ample phosphate fertilizer whenever alfalfa or clover is seeded.

"Evidence obtained from experiments with potatoes is distinctly in favor of fertilization with nitrogen, phosphate and potash," Dr. Spencer said. "As potato crops feed heavily on potash they require a good deal more potash, in proportion to nitrogen or phosphate, than do the common hay and grain crops."

Dr. Spencer also recommended that Nevada growers make use of soil tests to determine nutrient deficiencies for their individual farms. A booklet entitled, "Fertilizers Mean Profits to Nevada Farmers," containing advice on fertilizer usage in farmer language has been published by Dr. Spencer and W. A. Goodale of the University of Nevada College of Agriculture.

★

Recent experiments on barley culture conducted by the Agricultural Research Service in the West are bringing to light new and vital information on the effects of irrigation, rate of nitrogen fertilization and timing of application.

Dr. Henry A. Schreiber of the Agricultural Research Service in Arizona reports on tests with California Mariout barley planted in loamy fine sand in December of 1957 and harvested the following June. "By varying the timing of the nitrogen application it was shown possible to vary several important features of barley growth," he said.

"The best yields (two tons of grain per acre) resulted from the use of 240 lb. of nitrogen fertilizer per acre in three split applications with no stress for moisture," Dr. Schreiber said. He added that the same result could be produced by concentrating the fertilizer into two split applications of 120 lb. each of planting and early boot.

The only way maximum yield could be achieved with a single application was by applying fertilizer at planting and withholding irrigation until the boot stage, according to Dr. Schreiber. "It was interesting to note," he said, "that applying water at the earlier stage or delaying the single application of fertilizer to a later stage of plant development, was both wasteful and detrimental.

"From studies such as this," Dr. Schreiber continued, "a formula may be derived to determine exactly when to apply nitrogen and water to barley for maximum yield at the least cost to the farmer. If water and nitrogen are in rather short supply, it is important to know the times when it is most critical to ultilize these production factors."

The data from these tests are still being examined and more work is underway to add to and verify the preliminary findings.

★

"Fertilizer studies now in progress indicate that Wyoming soils need more nitrogen and phosphorus for the production of various field crops," says Dr. Leroy Painter, associate agronomist at Wyoming State University, Laramie.

"Fertilizer consumption in Wyoming has increased during the past three years, but fertilizer use must be stepped up if the nutrients removed each year by crops are to be replenished. If more fertilizer is not added, native soil fertility will become badly depleted," Dr. Painter observed.

Dr. Painter was making a progress report based on a number of experiments being conducted by agronomists of the Wyoming Agricultural Experiment Station in the areas of Torrington, Powell, Riverton and Laramie. All crops fertilized in the various studies were cultivated and irrigated as normal for the area.

"The yield of ear corn at the Powell substation appeared to be directly proportional to the amount of nitrogen used," Dr. Painter said, commenting on one of the tests. "Production was increased significantly by the application of 80 lb. of nitrogen per acre, and the annual application of 160 lb. of nitrogen increased the yield even further. In fact, each additional 80 lb. of nitrogen applied per acre resulted in an increase of 16 bu. of ear corn per acre in this test."

In another fertilizer trial at Powell, nitrogen fertilizer significantly increased the production of corn ensilage or fodder. The non-fertilized crop produced only 24.4 tons of corn ensilage per acre, whereas an application of 80 lb. of nitrogen per acre produced 27.5 tons per acre, an increase of three tons of feed. "A high planting rate appears best for the production of corn ensilage, whereas a lower rate seems desirable for the production of mature ear corn," Dr. Painter said.

The effect of phosphate fertilizers on the yield of alfalfa hay over a four year period has already produced striking results according to the agronomists' report. The termination of one of these tests at Powell has indicated that a heavy application of phosphate gives the best results. A fertilizer application of 240 lb. per acre the first year of the test yielded a net profit of $202 per acre, as compared to only $130 when no fertilizer was used. Even higher yields and greater profits were realized with a biennial application of 120 lb. per acre, producing a net profit of $219. The biennial application resulted in a more efficient use of the phosphate applied. "Completion of two other similar studies now underway at Riverton and Laramie should yield additional information on the effect of applying different rates of phosphate at different times in the rotation cycle," Dr. Painter said.

Dr. Painter went on to mention a study designed to measure the effect of phosphates on yield and quality of alfalfa hay as measured by phosphorus, calcium and protein content of the plant tissue. "Even 40 lb. of available phosphate increased the yield by 2.7 tons per acre over the non-fertilized check," he said, "and all higher applications were equal or better than this treatment." It was noted from yet another test that increased fertility also increased the yield of alfalfa seed.

Other studies conducted by the Wyoming agronomists concentrated on crops such as sugar beets, potatoes, barley and field beans. A fertilizer treatment of 40 lb. of nitrogen per acre significantly increased potato yields to 232 cwt. per acre, as compared to only 197 cwt. for the check plot. It was observed from the sugar beet test that variations in placement of nitrogen and phosphate fertilizers did not appear to affect yield.

"As the tests are still going on, this report is not final and further data and results will be available later this year," Dr. Painter said. "Repetition of such work over a period of several years will also be necessary to show more definite results or trends in crop and soil requirements."

★

Inadequate or improper fertilization is one of the most common causes of poor quality turfgrass, said Dr. Victor B. Youngner, turf expert at the University of California, Los Angeles.

Nitrogen is the fertilizer element of greatest concern in lawn upkeep, he says. More nitrogen is used by the grass than any other single nutrient, and therefore must be supplied in greater amounts.

A minimum rate of 6 lb. of actual nitrogen per 1,000 sq. ft. for a 12 month growing season is recommended. Soluble forms of nitrogen, such as urea, ammonium sulfate or ammonium nitrate, are best applied at ½ to 1 lb. of actual nitrogen per 1,000 sq. ft. at monthly intervals. This helps to avoid leaching loss of nitrogen and to insure a fairly uniform rate of turf growth.

Organic materials, such as activated sewage sludge or the new synthetic-organic-urea-forms may be applied in larger quantities at less frequent intervals to obtain the same results. These materials depend upon bacterial action to convert nitrogen to an available form. Application may be at three to six month intervals.

Commercial mixed fertilizers may be used to supply necessary phosphorus and potash. Iron deficiency, common in western soils, may be corrected by spraying the grass with iron sulfate at the rate of 2 oz. per 1,000 sq. ft.

★

It only takes four Canada thistle plants per 16 square feet to reduce wheat yields by 30 per cent. That's what researchers at Bozeman, Mont., found out in recent tests with irrigated spring wheat.

When thistle infestations averaged 50 shoots per 16 sq. ft., wheat yields dropped 60%.

"This indicates that even though the wheat crop may not produce much more than hay, it will still pay to spray for Canada thistles to prevent a buildup of this weed next year," he said.

Since Canada thistle seeds are carried many miles by wind and water, farmers should do everything they can to prevent seed production. Seeds will not germinate if the thistles are mowed or sprayed during or before the week they blossom.

Tests in both Montana and South Dakota indicate that ¾ of 1 lb. of 2,4-D amine per acre will prevent seed production, kill some old plants and weaken others so that later treatments will eliminate them.

Experimental results indicated that the percentage of thistles killed will depend on the type of follow-up treatment used.

Three cultivations after harvest (one plowing and two cultivations with duckfoot cultivator or one-way disk) killed 85% of the weeds during the first year. A second year spraying in the grain combined with three cultivations after harvest gave 100% elimination.

Plowing after harvest combined with spray treatments controlled up to 98% of the thistles; spraying only, over a three year period eliminated 90%; and late fall plowing following field spraying for three years killed about 70%.

★

"Successful grassland farming depends upon a willingness of the livestock producer to use up-to-date practices and available technical agricultural assistance," says Dr. Ralph L. Wehunt of the University of Georgia Agricultural Extension Service.

Dr. Wehunt said that the cheapest feed a dairy or beef farmer can buy is fertilizer—applied to grass. Adequate amounts of nitrogen, phosphate and potash are required to "cash in on grass."

He also stressed the importance of lime to successful grassland farming. "To farm a field without knowing its lime needs," said Dr. Wehunt, "may be like buying a termite-infested house—a new coat of paint will not help solve the problems. Neither will a new tractor make profits running over an acid field of grass."

Fertilizer demonstrations conducted in southwest Georgia showed farmers how to "cash in on grass" with sound fertilizer practices.

Six farmers conducted fertilizer demonstrations on Bahia grass in cooperation with their county agents.

One treatment on these farms consisted of an "average farmer treatment" of only 300 lb. of 4-12-12 fertilizer per acre without top dress nitrogen. This treatment yielded only 2,944 lb. of air-dry forage per acre. Another treatment consisted of adequate phosphate and potash applied according to soil test recommendations plus 50 lb. of top dress nitrogen. This treatment produced 5,113 lb. of forage per acre. But with a treatment of 100 lb. of nitrogen along with adequate phosphate and potash, the yield jumped to 7,052 lb. of forage per acre.

★

Phosphorus fertilizers are needed for maximum alfalfa yields in southern New Mexico soils, according to recent experiments conducted by the agricultural experiment station of New Mexico State University.

"Experiments show that the rate of phosphorus fertilizer application should be at least 120 lb. of available phosphoric acid per acre during the first year," says H. E. Dregne, professor of soils in NMSU's agronomy department.

"Another fairly heavy application should be made in the third year in southern New Mexico. Loss of available phosphorus by reversion did not appear to be an important consideration in the calcareous soil. Residual effects of 240 lb. per acre of available phosphoric acid showed up four years after the fertilizer was applied," Dr. Dregne says.

OSCAR & PAT

Oscar Schoenfeld frowned and looked up from his discount work as he heard loud, unrestrained laughter from the area of the store where the coffee urn and counter were located. He saw Pat McGillicuddy and a farmer named Bill Behling from over Beecher way standing there drinking coffee out of paper cups.

"Ach," muttered Oscar to himself. "Drinkink coffee again. Is that all that Irisher has to do? Himmel, the time he wastes drinkink coffee with farmer loafers, when he shouldt be out collecting or helpink in the warehouse. One of these days I will throw the coffee urn oudt, or I will sell it to the junk man. Maybe on Pat's next vacation. I will fix him."

The free coffee service was a business building and good will feature which Oscar and Pat had argued about many times. Pat put it in one night and Oscar had almost had a stroke the next morning when he saw it.

"Ach, you are goink crazy, McGillicuddy," Oscar had stormed. "You are sellink fertilizer at discounts, you never go oudt and collect, you take free soil samples, you gif away pencils, calendars, yardsticks, and now you gif away coffee. Everythink goes out and nottink comes in. What kind of business is that?"

"We get something back in future orders," Pat explained. "Coffee makes more friends for us. It induces the farmer to stay longer, promotes friendliness. And when he stays longer drinking coffee, he'll talk about his fertilizer and other farm needs. Sometimes they buy on impulse, too."

"Ach, I neffer see them buy!" burst forth Oscar. "Some of them come in effery day for coffee and walk right oudt. There is no money in that for us, McGillicuddy. This is no Ladies' Aidt! This is a fertilizer business, and we shouldt schtick to sellink fertilizer and collecting for it."

On this particular day, Oscar suddenly saw Nora McGillicuddy and her black haired daughter, Colleen, walk into the farm supply. Each was carrying a three layer cake with a plastic cover over it. The women put the cakes on the counter where the coffee urn rested.

Oscar paled. "Ach!" he ejaculated. "Cake. Now he is goink to gif them cake, too!"

He picked up a long paper from his desk and strode out into the farm supply store. He heard Bill Behling say, "Hey, what's this—cake? Say, I'll have a slab of that chocolate fudge and another cup of coffee. Gee, this is somethin'."

Oscar came thumping forward like an imperious autocrat. "Ach!" he burst forth, "if you want to gif farmers something all the time, gif them these delinquent accounts. And tell them they have to pay six per cent interest after 30 days!"

Pat looked a little embarrassed. "Thanks for bringing down the cakes, Nora. You and Colleen better go now. Oscar and I will have a little conference."

"Conference!" echoed Oscar. "You bet we will haf a conference. I will throw oudt that coffee urn. Then we will haf time to sell some fertilizer. This is no restaurant."

Bill Behling winced, swallowed the last of the wedge of fudge cake and quickly gulped some coffee. "Storm's comin' up," he opined. "I'd better head back for the farm."

"No, please stay here," Pat said. "I want you to hear the story of the cakes, as well as Oscar."

"Okay," said Bill Behling, "so long as I ain't interferin'. But I like a good fight. I'll be the referee. Remember, don't you two throw bags of fertilizer at each other."

Pat took a cardboard sign and placed it on the counter beside one of the cakes. "Read that sign, Oscar," he said. "It says one can't bake a good cake without a good recipe and followin' it carefully. Now here is another sign."

Pat brought out another sign which had been tucked behind a counter. It showed a picture of two wire baskets of corn. One was full to the top, the other was only half full.

"Recipe farming pays!" said the headline.

The rest of the copy then went on to say that good farmers are like good farm wives baking cakes. They've got to know what they are doing. They have to have good recipes to follow to get good results.

"Recipe farming," Pat explained, glancing sharply at Oscar, "means that the farmer first of all needs a good soil test. Then he needs good seed and in the right amounts. He needs the proper fertilizer. In the case of corn he needs a starter and should follow up with sidedressing to get the results this man did whose corn is in the big basket. The farmer whose corn is in the smaller amount used a small amount of starter fertilizer and that is all. That's why he got a small yield. He had no soil test either. He farmed by 'guess', not by recipe. No farm wife would bake by 'guess' and expect to get the best results."

"Ach, silly!" Oscar burst forth. "Farmers know that. You don't haf to give them coffee and cake besides."

"Sure you do," Bill Behling grinned. "If you are nice to customers they'll come and see you more often."

"Ach, we are so nice to customers we don't even ask them to pay their bills on time," Oscar said with a scathing look at his partner.

"These two signs will tell our customers a story," Pat said, ignoring Oscar's cutting remark. "Nora baked the cakes and we paid for them—not the firm. Our ad this week—paper's out right now, will invite farmers in for free cake and to ask about recipe farming. That should get them started early thinking about fall fertilizer for plowdown. Maybe some of them will get early soil tests."

"Not a bad idea," Behling said. "I never get my soil tested until you come around and prod me to do it, Pat. And I have been buying more fertilizer every year from you guys, too."

"See!" Pat said triumphantly.

Oscar frowned. "Sellink means nottink," he snapped, "unless you collect for it. Look at this list. Ach, we don't make a cent until all that money comes in. The longer it schtays oudt, the longer it ties up capital we could haf in the bank at interest. Sellink! Coffee! Cake! Phooey!" And he stomped angrily back to his desk.

Trade Winds From California

EUREKA, CAL.—Milton L. and Ann M. Schmidlin are founders of the new Schmidlin Nursery opened on Anderson Grade Road, Yreka, to retail farm chemicals and related products.

●

FORTUNA, CAL.—Benjamin F. Kemp, owner of the Kemp Nursery in Fortuna, died recently following an illness. His retail store continues to be operated by Christine Kemp.

●

MODESTO, CAL.—The Best Buy Nursery Co. has been founded in Modesto at 1810 Vernon Ave., by Richard A. Babcock to sell farm chemicals for home garden use.

●

FOLSOM, CAL.—The Lake Feed and Garden Center at 702 Bidwell St., Folsom, continues operating under single ownership. Former partners were Everett E. Holsclaw and Jack Bartlett.

●

SAN MATEO, CAL.—The Green Giant Garden and Home Supply Co. has been incorporated in San Mateo. Principal shareholders are Donald C. Bacon, Joseph W. Welch and John W. Bacon.

●

SAN FRANCISCO—Gov. Edmund G. Brown has announced that Charles V. Dick, 52, assistant director of the State Department of Agriculture, will move up to the post of deputy director of the department. The vacancy was created by the retirement of Charles Josef Carey April 1. Mr. Carey died April 4, only three days after his retirement.

what's NEW?

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21' Boom 13 Teejet Nozzles

Perfect for applying weedicides, insecticides and liquid fertilizers—write for literature.

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OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor

Dealers can assist their good customers who desire fertilizer loans by suggesting names of bank representatives with an understanding of agriculture.

An increasing number of banks now provide trained men who understand the farmer's problems and are qualified to advance loans for the purchase of fertilizer, according to Galen Morley, of the First National Bank of Kansas City.

Mr. Morley says these banks make such loans "with the full knowledge that sound use of fertilizer is a good investment which can return $3 or more for every dollar invested.

"I am sure farmers will find that where such a specialist is employed, credit for fertilizer will be available on a sound basis," he adds.

Mr. Morley advises farmers applying for a fertilizer loan to have with them: (1) A record of past crop yields; (2) recommendations for fertilizer use from their county agents; (3) a record of yield increases from fertilizer use in the previous year; (4) a budget that includes provisions for the use of fertilizer.

Mr. Morley emphasis that a successful credit program benefits the banker, the dealer, the farmer and the community. As an example, he cites a Kansas bank which employed an agricultural representative seven years ago. The bank began sponsoring a series of fertilizer meetings which have now become one of the most important events in the county.

"As a direct result of this program," says Mr. Morley, "the county is now high in the state in fertilizer use and the average wheat yield has been raised from 18 to 38 bu. per acre."

Accurate Lime and Fertilizer Spreads From 100 lbs. Per Acre and Up!

NEW LEADER L-32S SPREADER

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NAME.....
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Mail coupon for L-32S literature and a copy of "Your Land Is Different" a booklet designed to help you sell more bulk fertilizer.

Agrico Announces Changes In Agronomic Service Staff

NEW YORK—Dr. Donald B. Pfleiderer has joined the agronomic service staff of the American Agricultural Chemical Co., announced Dr. D. P. Satchell, agronomic service manager.

Other personnel changes announced by Dr. Satchell include:

J. H. Gilleland, former staff agronomist in the firm's New York office has been named regional agronomist at Humboldt, Iowa, covering central and western Iowa and southern Minnesota, and R. D. Sibley, Jr., former staff agronomist in New York, has been named regional agronomist for New England and New York state. He will be located at North Weymouth, Mass.

Dr. Pfleiderer will be located at the company office in Detroit from which he will assist W. K. Kidder in field service work.

Bob Allard Resigns As Pacific Agro Exec

SEATTLE—Bob Allard has resigned as vice president and manager of the Pacific Agro Co. Named to replace him was Lee Fryer.

Mr. Allard and his family are moving to Phoenix, Ariz.

In another staff change, Grant Cline has been appointed manager of the agricultural chemical division.

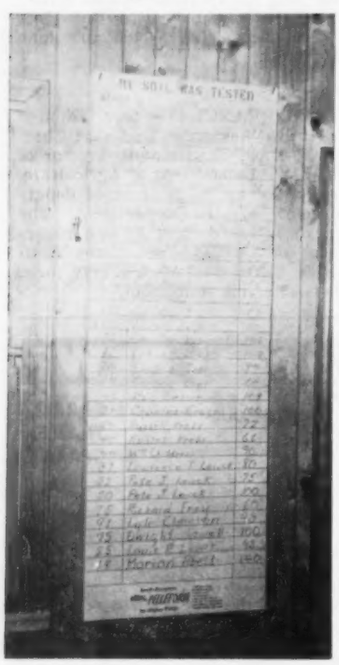
SNELLING

(Continued from page 9)

year, loose leaf sheets can be included in the farmer's master report.

While some farmers in other regions do not always follow soil test lab recommendations on fertilizing, they do follow Mr. Snelling's recommendations quite closely. The reason is that farmers are shooting at their own production goals which they themselves have set. Mr. Snelling merely helps them work out fertilizer requirements for these goals.

Mr. Snelling states that lack of stand in corn population per acre is often responsible for unsatisfactory bushel yields despite adequate fertilization. In a number of instances he has proved to customers that by increasing the corn plant population per acre, and using the same amount of fertilizer, yield has gone up 15-20 bu. per acre.



THIS SOIL test board hangs in the showroom of the Snelling Farm Service. Farmers who have had their soil tested have their names, acres and yield listed.

In the firm's showroom is a soil testing customer list. It lists the customer's name, the number of acres he has planted to corn as a result of a fertilizer test and also his yield per acre. Farmers watch this bulletin board and chart very closely. The owner finds that the chart often stimulates a farmer into asking questions about fertilization of corn. Thus the chart paves the way for many sales of fertilizer for this enterprising dealer.

Once Ralph has helped a farmer to build the fertility of his land he urges him to use a maintenance fertilizer. So successful has he been in selling such a maintenance program that farmers recommend it to their neighbors and constantly check with Mr. Snelling on the program.

This dealer believes in advertising and uses direct mail and newspaper advertising quite frequently. A recent illustrated direct mail piece in color showed various pictures of the Snelling operation and detailed it step by step. The piece also printed six testimonials with pictures and statements of satisfied customers. Over 3,000 of these direct mail pieces were mailed to farmers, reports Mr. Snelling and an excellent response was received from it.

The firm has an office and salesroom near the village of Boswell and a new, large fertilizer warehouse several blocks distant. Both bag and bulk fertilizer is sold and a spreading service is offered, too.

THIS IS THE NEAT exterior of the Snelling Farm Service in Boswell, Ind. The firm also has a new warehouse several blocks away.

GARDEN CENTER

(Continued from page 9)

ers. He stores them in a large barn and places them on tiers. Many customers order their tillers and power mowers picked up in fall and serviced and then stored for the winter. About 750 of these equipment pieces are stored in the barn over winter.

This winter servicing helps to provide steady winter work for the Payne service shop.

Other equipment rental items include 100 lawn rollers and 100 fertilizer spreaders. These items are all painted numerically and the numbers jotted down on the rental tickets. Thus Mr. Payne knows who has which roller or spreader, and this helps him keep track of individual items. Seasonally the equipment for rent is displayed in front of the store and this helps to stimulate demand.

Fertilizer is displayed in bags in considerable mass units both in the 75 by 75 ft. garden store and also in the 65 by 80 ft. plant department. In the latter area, as a customer buys plants, the employee asks, "Need fertilizer?" Many extra bags are sold through such suggestions. Customers can back right up to the plant selling area, and employees can load fertilizer for them quickly.

An annual Garden Show is held each spring, usually on a Sunday. Between 8,000 and 10,000 persons attend. Cash sales on these days usually amount to $6,000 with another $3,000 coming in from the charge customers.

The firm guarantees its nursery stock for one year, and this is an important factor in winning customers and building good will.

Mr. Payne has contracted with a Madison seed firm to mix a special blend of lawn seed for him. He sells over 50 tons of this per year. His staff packages this seed and displays it in the store. C & P also packages feed in small lots from 5 lbs. and up to sell to people who have small numbers of laying hens.

Mr. Payne has designed his own display islands in the store. They usually run up to 15 ft. in length and are 4 ft. wide. Two large islands, 4 by 15 ft., are devoted to a showing of insecticides, pesticides and herbicides. One island shows sprayers, while still another is devoted to a showing of garden hose and reels. In fact, when the farmer, the gardener or the suburban homeowner walks into this large, well-stocked and well-lighted store, he sees innumerable items that stimulate the buying urge.

In recent years Mr. Payne has taken on a line of fencing. Last year he sold more than $30,000 worth. He hires a crew of five men to put up fence which a customer buys, and has kept them very busy from spring through fall. He expects his fence business to increase 25 percent this year. He believes it is an item which many farm and garden stores can stock and sell profitably. He thinks an installing service is vital if a dealer wishes to sell much of the line.

Other lines which are sold in the store include bird food and supplies, picnic supplies and trellis items. All are well displayed, which helps create more sales.

There are a number of special display ideas which Carl Payne employs profitably. For example, he uses from five to ten super market shopping carts, fills them with garden and lawn merchandise and spots them at different parts of the store. The shopping carts can be moved at will and they help to increase "impulse buying."

During the spraying and dusting season, Mr. Payne uses about five of the carts for showing insecticides and related materials, and this has increased the sales of these items considerably.

"We are well pleased with the many sales we make from this display feature," Mr. Payne states, "and we will continue using 10 or more shopping carts all year around. We even used them for displaying seed potatoes and tomato plants, and this upped sales on those items."

Garden tools are often difficult to display, but Mr. Payne placed some of them in metal barrels. He placards the barrel with a special sign and thus draws attention to such items and gets more sales.

He has also designed and built small, special display islands for tools such as long handled lawn edgers and clippers. These are shown against pegboard backgrounds. Some hedge clippers are also displayed on these small islands.

In the plant food department, a large garden flower bowl is used for the showing of special merchandise in cans. Purchasers of plants see this display at the edge of the wrap up area and often buy them.

A special display board in the plant department carries pictures and descriptions of various types of roses stocked and sold. This board helps increase the sale of rose shrubs by helping customers decide which type to buy.

Just inside the main store entrance are posted a number of well lettered signs which tell the customer a great deal about some merchandise items in stock. One chart names shrubs for sale and lists the prices. Another gives shade tree prices. Others give names and prices of fertilizers, fruit trees, evergreens and fencing. These charts are studied by many customers and aid in their purchasing.

Mr. Payne also knows that his customers are greatly concerned with the weather. Therefore he has a daily weather forecast. It is posted on a blackboard which is displayed outside the store every day. Many customers consult it.

The C & P Garden Center takes display space in two Madison newspapers about twice a week. The size of the ads vary, but Mr. Payne usually schedules ads large enough to be seen quickly by newspaper readers. He states that special merchandise offers which he advertises draw very well.

This enterprising farm and garden store owner started in business 15 years ago, when he operated a highway fruit stand near the site of his present store. At that time he was grossing about $30,000 per year. He realized that a farm and garden store would serve a need in this outskirts area of Madison, a city of 90,000 population.

Mr. Payne's fruit stand operation blossomed out into a small shopping center consisting of a super market and hardware store, plus several other stores. His garden supplies department in his hardware store grew so large he had to erect his present garden store four years ago in a nearby location.

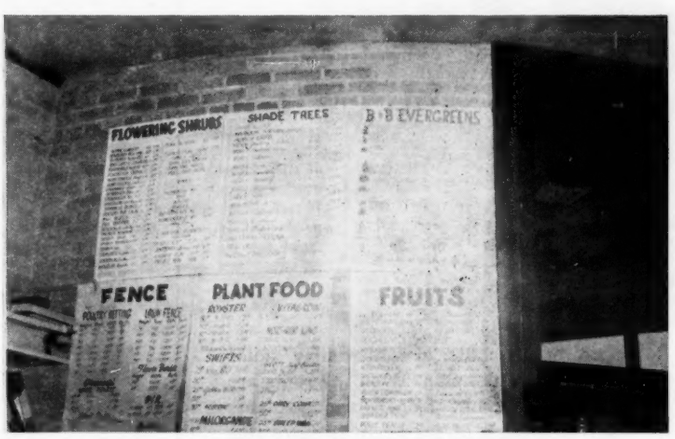
The garden store ranks second in terms of gross volume of Payne's shopping center stores. The super market is first. Now Payne is going to erect more stores on his shopping center site at a cost of $750,000. The new additions will be a bigger hardware store and a large drug store.

He is also leasing a hardware and garden supplies store in the Westgate Shopping Center, a new development, in West Madison.

Thus it can easily be said that the sale of farm and garden supplies is helping Carl Payne become one of Madison's most successful merchandisers. He has faith in the future of the farm and garden store field and envisions tremendous growths in annual volume for aggressive, alert merchandisers in the field in the next five years.

Store Displays Keep Customers Intersted

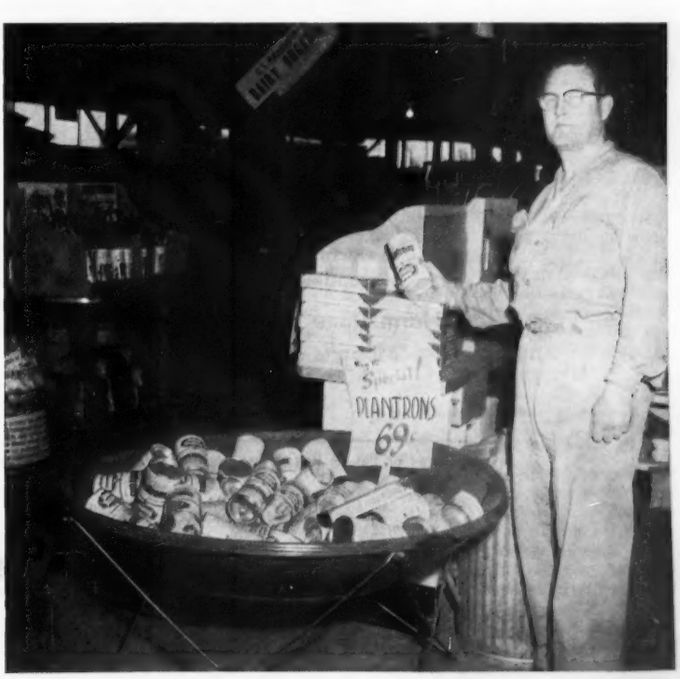
AMPLE PARKING FACILITIES—Outside view of C & P Garden Center, Madison, Wis., shows the attractive parking area which invites buyers to stop and shop. Note also the window signs prominently situated, and also displays of merchandise set outside the store.



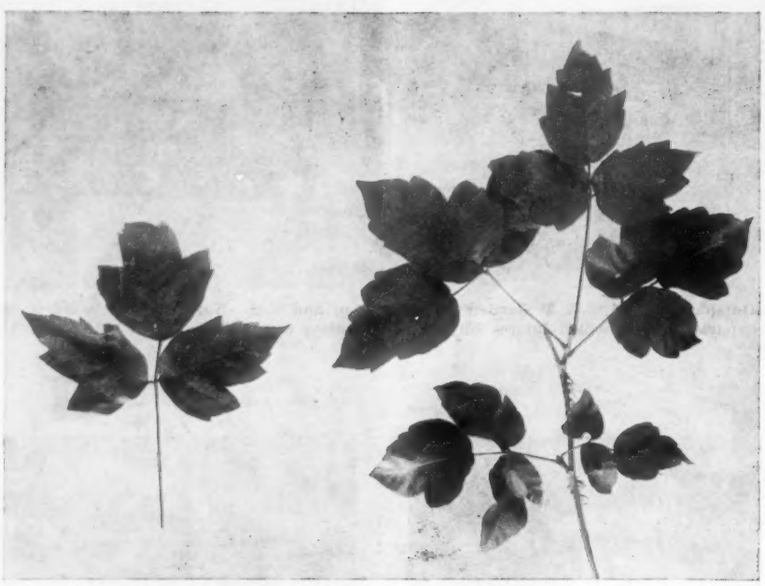
SIGN LANGUAGE—Store customers get information regarding prices, sale items, the lowdown on new merchandise and product data from signs on this bulletin board prominently displayed in the store. Attractions like this are attention-getters.

WHAT'S THE WEATHER?—Daily weather forecast is a popular service provided by C & P Garden Center. Here a young lady customer checks up on what the weatherman has in store for the community, and plans her out-of-door gardening activities accordingly.

PEGBOARD RACK—This type of pegboard rack is highly adaptable and suitable for displays of insecticide spray products for users to look over. A neat and interesting method for effective presentation of merchandise for customers' scrutiny.



SEASONAL PRODUCTS—Here's the way C & P displays seasonal products in its plant department. An employee shows how special sales items are presented and merchandised. Keeping pace with buyers needs is one of the most important considerations of this store.



Poison Ivy

(Rhus radicans)

How to Identify

There is an old saying regarding poison ivy: "Leaves of three, let them be." The plant does have three leaves on stems which range from 8 to 18 inches in height. Leaves are smooth, drooping and divided into three parts, or leaflets. Each leaflet is from 1 to 4 inches long, a little longer than wide, and somewhat pointed. Flowers are small, green, five-petaled and arranged in a head 1 to 3 in. long. Berries are small, white, and round. The plant changes from a bright green to a reddish-yellow as it matures.

Where It Is Found

This toxic plant is found in open woods, along fence rows, in thickets, in orchards and in wasteland. It is ubiquitous enough to warrant a close watch for it by persons susceptible to its action against the skin.

Harm Done by Plant

All parts of the poison ivy plant contain a poisonous material which may cause blistering of the skin. Even the roots are toxic, and smoke from burning plants carries enough of the toxin to have this effect on anyone who allows himself to be "smoked" by the vapors from such a fire.

Growth Habits

Poison ivy is a woody perennial, reproducing by seeds and rootstocks. It has a creeping or climbing habit of growth, with old plants sometimes reaching the top of 50-foot trees. Seeds are contained in white berries.

Control of Plant

Some chemical herbicides will control the ivy plant easily, and cultivation or plowing will kill it out. Small patches can be killed by hoeing or digging. Several mowings of infested areas in meadows will kill it out. Obviously it should not be pulled by hand.

Illustration of Poison Ivy Plant furnished through courtesy of the U.S. Department of Agriculture.

INSECT NOTES

(Continued from page 5)

the late crop setting fruit and growing rapidly.

From all indications the heat and drouth during late June killed off numerous offspring (larvae and pupa) of the overwintering boll weevil brood. Even though adult weevils have been seen for a week to 10 days the square infestation rate remains rather low.

We can expect first brood adults of boll weevils to appear at any time if they are not already out. Cleveland and Lincoln county agents reported early this week (July 17) full grown grubs in squares, hence an increase in adult weevils and punctured squares can be expected by early next week in many fields. Most populations this week are still low with only a field now and then showing anything approaching serious damage. While no large numbers of boll worms have been reported from any area, this pest must be watched carefully. Only an occasional injured square was found this week. Mites are still a threat in a few fields in most all areas.

Grasshoppers on Increase In Some Florida Districts

GAINESVILLE, FLA. — Grasshoppers are reported increasing in the Ocala district. Tobacco budworms and corn earworms are reported damaging watermelons in the Pensacola district. Anthracnose is reported causing severe damage to watermelons in the Marianna district, and the rains have made it difficult to control the Mexican bean beetle in the same district.

Light infestations of red spider and whitefly on citrus are reported from the Macclenny district. Heavy infestations of whitefly are to be found in groves and nurseries in the Ocala district. Cigar casebearers on pecans and red spider on dooryard citrus are still giving considerable trouble in the Marianna district.

Six-spotted mite is reported lightly infesting azaleas in the Macclenny district. In the Jacksonville district, the jassidfly seems to have reduced its attacks on leatherleaf fern, leaf miners are very severe on azaleas, and oak leaf blister is severe on oak trees.

In the Monticello district spittlebugs are severe on St. Augustine grass in the Tallahassee vicinity, tea scale seems to be increasing its attacks on camellias, and the eastern lubber grasshopper seems to have vanished from the Lake City-Live Oak vicinity. In the Pensacola district blister beetles are infesting American hollies and leaf rollers are damaging azaleas.

Insects on the Increase As Cotton Crop Develops

PHOENIX, ARIZ.—Cotton continues to make good growth in the state, but insects are on the increase. We now find a serious infestation of beet armyworms in those fields treated for pink bollworms in Maricopa and Pinal counties. The worms are also present in Yuma and Pima counties. These armyworms are feeding the same as bollworms, and are destroying many squares. Large armyworms are as hard to control as bollworms. Lygus, black fleahoppers and fleahoppers (green) are also increasing in the state.

At the present time in Maricopa county, beet armyworms are causing serious injury in Rainbow Valley, Buckeye, Gila Bend, Perryville, Avondale and Scottsdale. It is interesting to note that these are the areas that received the bulk of the insecticide applications under the pink bollworm eradication program. Lygus and fleahoppers are active in all sections of the county. Much shedding of squares and small bolls can be traced to these two insects. A few spider mites are also appearing, primarily in the pink bollworm sprayed areas.

In Pima county, Lygus is starting to appear in the Sahuarita area; they should be watched. In the Marana and Avra Valley areas, Lygus counts were well over 50 per 100 sweeps in many fields, and in some fields over 75% of the squares were being destroyed by Lygus. Black fleahoppers and green fleahopper nymphs were very prevalent in the Marana area. Beet armyworms are also causing serious injury in both of the above areas.

Bad infestations of beet armyworms have been reported in the Florence, Coolidge, Casa Grande and Hidden Valley areas. Lygus and fleahoppers continue to cause injury in many fields and are on the increase. Some spider mites are also showing up.—J. N. Roney.

Orchard Mites Continue Troublesome in Indiana

VINCENNES, IND. — Orchard mites, especially the two-spotted species, continue to be troublesome in both apple and peach orchards.

First-brood codling moth adults are still emerging in this area. Although excellent control of both first and second-brood codling moth has been secured by most growers, continued protection is needed. Second-brood entries are abundant on unsprayed trees in experimental plots, even though populations were low.

Daily trap captures of red-banded leaf roller adults increased during the past week, indicating that third-brood eggs are being laid.

Most peach orchards have reached the stage where no further insecticides will need to be applied this season for control of insects that attack the fruit. Peach borer control will still be needed on others. There are also a few orchards where Oriental fruit moth injury to twigs was high during first and second-brood injury. These orchards will still need to be sprayed for this pest. Orchard mites may need further control in a few instances.—D. W. Hamilton.

PEST WARNING

PHOENIX, ARIZ.—Arizona cotton growers have been told to do a better job of controlling insects if they don't want to end up in the same fix they did a year ago.

J. N. Roney, state extension entomologist of the University of Arizona, gave the warning in a talk before some 100 growers attending an insect control session at the cotton research center here.

The cotton crop, a year ago, looked every bit as promising as it does now, said Dr. Roney. Experts freely predicted 1,300 pounds of lint per acre. Then along came lygus bugs, fleahoppers, bollworms—and a hot spell termed "unseasonable." The combination was disastrous to some growers, Dr. Roney said.

Another pest is on the march in greater numbers this year, the beet armyworm, he said. It is especially active in fields dusted or sprayed for pink bollworms.

West Texas Cotton Prospects Dim With Insect Infestation

LAMESA, TEXAS — West Texas cotton growers have the best crop prospects in several years, except for one thing—an insect infestation that is perhaps one of the largest ever seen this early in the year.

Aphids and thrips are still found in the younger cotton, while boll worms and cabbage loopers are building up rapidly in many west Texas counties. The boll worms came a bit ahead of schedule, possibly because some of the cotton was planted earlier than usual.

Most farmers are spraying and dusting, while the crop dusters are working long hours trying to stay up with orders.

Heavy rains have also caused an increase of angular leaf spot. This is one disease, however, for which scientists have not found a cure. The only hope for infested fields is dry weather and some sunshine.

Warning System Set Up to Alert Farmers Against Recurrence of Greenbug Invasion

ST. PAUL, MINN.—Weather maps and other tools are being utilized by University of Minnesota entomologists in a plan to alert farmers of the area of possible future infestations of greenbugs. Periodically the bugs have been blown into Minnesota from southwestern states in May. A heavy invasion occurred this year just as it did in 1926, 1949 and 1953. In future years, however, such an event should not be a complete surprise to grain growers in the state.

Despite the current season's being generally poor for small grains in Minnesota, the recent greenbug attack has added to the problems of growers. In some southern counties, Martin, Cottonwood, Brown, Nicollet, Sibley, Blue Earth and Jackson—estimates of damage to oat fields ran from 25 to 70%. Greenbugs were also reported in all other southwestern counties and in some spots north of the Twin Cities. And in many cases, the greenbugs transmitted a virus to the grain plants—causing red-leaf in oats and yellow-dwarf in barley and wheat.

Now the entomologists think they know exactly how the greenbugs got here.

After study official weather maps for the first week of May, the University men noticed an unusual stationary air-front stretching like a wall from Oklahoma's panhandle, where the bugs are most numerous, northeastward through Minnesota. Just the right combination of high and low pressure areas along the air-front scooted the bugs up to high altitudes. Then strong winds curved in from the Gulf of Mexico and carried the bugs here. As the winds diminished, the bugs were dumped in southern Minnesota fields.

A check of 1926 weather conditions showed that almost the same kind of meteorological conditions existed then—with about the same kind of frontal activity and wind movement.

Therefore, the entomologists concluded, if similar spring weather conditions are spotted in the future, Minnesota had better prepare for another visit from the greenbugs.

As for direct damage from the greenbug itself this year in Minnesota, the entomologists say it's tapering off. Not only has the recent warm weather been tough on the bugs themselves, but it also has favored a build-up of the natural enemies of the greenbug.

But the virus infections, which the bugs transmit with only a short period of feeding, are still on the increase. The disease, red-leaf in oats and yellow-dwarf in barley, may also be transmitted by other grain-infesting aphids like English grain aphids and corn leaf aphids. University plant pathologists assure farmers, though, that the virus does not attack alfalfa or clover. Therefore, legumes seeded this spring are expected to come through unharmed even if the cover crop is dying from the virus.

USDA Builds Research Laboratory in Ohio

DELAWARE, OHIO — A $300,000 research laboratory for the U.S. Department of Agriculture is being erected in the Delaware Reservoir area on 137 acres recently transferred from Army Engineers to the USDA.

The building will house the ornamental plants section of the crops research division and the division of forestry sections in insect and disease control.

Roger U. Swingle, pathologist, will be in charge of the ornamental plants research, and R. R. Whitten and Dr. Carl Seliskar will handle the work in the forestry division.

The project is the result of a $350,000 appropriation granted last year by Congress to establish a tree nursery for research in disease of shade and forest trees and shrubs.

Methods of controlling elm tree disease is among the problems that will be studied here, Mr. Swingle said.

The new building is expected to be ready for occupancy Jan. 1, 1960. It is situated off the Main-Hanover Rd., southeast of Delaware Dam.

California Toxicologist To Receive Award

WASHINGTON—Francis A. Gunther, insect toxicologist at the University of California, Riverside, has been selected to receive the 1959 Harvey W. Wiley award of the Association of Official Agricultural Chemists.

The $500 award was established in 1956 to honor the father of the original Pure Food & Drug law and founder of the association.

The award is made annually for outstanding contributions to the development of methods for the analysis of foods, drugs, cosmetics, feeds, fertilizers or pesticides.

Public Hearing Set for New Seed Screening Law

SACRAMENTO — The California Department of Agriculture will hold a public hearing Aug. 13 in Sacramento on a proposal to change regulations pertaining to seed screenings and cleanings.

It is proposed to repeal the present regulation and adopt a new one to allow movement of seed screenings and cleanings to approved processing mills or establishments under permit. The feed grain and seed trade would be furnished with a list of approved processing mills or establishments under terms of the proposed regulation.

Cecil H. Meadors Joins Amchem Products

AMBLER, PA.—Amchem Products, Inc., Ambler, has announced that Cecil H. Meadors has joined the firm as a sales development specialist on brush killers (mesquite) for range lands and on special types of weed killers for farms.

Mr. Meadors, a Texan by birth, will work in his native state and in Oklahoma. He was employed from June, 1951 to March of this year at the agricultural experiment station in Spur.

BUMPER CROP

PORTLAND, ORE.—Ideal growing weather of the past several weeks is credited with producing a bumper 1959 strawberry crop that's surprising crop forecasting specialists.

Processing plant receipts kept by Carl J. Hansen, local USDA fruit and vegetable market news service representative, place amount of berries received by canners and freezers at approximately 84,400,000 lb. for the season.

This compares with 67,000,000 lb. received by processors during the 1958 season.

INCREASE 32-FOLD . . .

Trends in Fertilizer Use In California, 1920-1959

By Robert Z. Rollins
Chief, Bureau of Chemistry
California Department of Agriculture

CONSUMPTION of fertilizer in California in the period from 1920 to 1959 has been at a much greater pace than that of the nation in general. In fact, while national tonnage of fertilizer increased three times, California usage increased THIRTY-TWO times.

This information is from the bureau of chemistry of the State Department of Agriculture. The bureau is primarily a regulatory agency set up to administer portions of the agricultural code pertaining to the registration, labeling and sale of fertilizers as well as laws pertaining to pesticides, spray residue and the agricultural pest control business. It is frequently asked for data on types of fertilizers used in the state and other statistics.

During the period of 1920 to 1959, the national usage of fertilizers increased from 7 to 22 million tons annually, but in California the increase was from 66,000 tons to 2 million tons, an increase of 32-fold.

In both cases, most of the increase occurred since the start of World War II in 1941.

In 1920, California used less than 1% of the national tonnage, but it now uses nearly 10% of the total. This information is based on data developed by the USDA and include several kinds of materials as "fertilizers" which California law regards as other kinds of agricultural chemicals, for example, gypsum, soil sulfur and manure; and California tonnage accounts for most of the national tonnage of these materials.

The tonnage of agricultural minerals is approximately the same as that for commercial fertilizers. Liming materials make up only a small portion of the total and most of the other agricultural minerals and dried manure are included as "fertilizers" in national terminology. The tonnages of commercial fertilizers and agricultural minerals are derived from tonnage license tax poyments. The tonnage of dried manure is derived from estimates make by USDA statisticians.

The amount of commercial fertilizer used in California roughly parallels the total crop value each year. California has led all states in agricultural production since 1958. With 2% of the nation's cultivated land and 6% of the nation's farmers, it has earned 9% of the national farm income. Out of every dollar the California farmer receives for his crop, he spends 5¢ for commercial fertilizers. Years ago most of the fertilizer was used on citrus and the tonnage dropped markedly after each freeze year.

In the early years of this 1920-'59 period, half the annual tonnage was sold during the first three months of the year. This is still the pattern in many other states. Between 1940 and 1950, equal tonnages were used in each of the four quarters. Now the largest portion is used in the April-May-June quarter.

This may reflect in part the increased use of liquid fertilizers which can be applied after planting and during the period of rapid plant growth.

Even in the years when equal amounts of fertilizers were sold in each of the four quarters, sales were not uniform throughout the year. The fictitious picture of uniformity was caused by periods of peak sales overlapping two quarters.

The number of firms registering commercial fertilizers has increased ten times and the number of firms registering agricultural minerals has increased five times during this period. The big increase in commercial fertilizer registrants in recent years reflects in part registrations secured by a number of dealers who want to sell portions of liquid fertilizers from large lots purchased from primary suppliers. In 1957-58, registration was secured for 2,430 brands and brand names.

A license is required of everyone who solicits sales of commercial fertilizers, agricultural minerals, or manure away from a fixed place of business. It is believed that many of these salesmen secure a license to sell only manure. Licenses may be suspended or revoked for misrepresentation or other violations of law. California is the only state that requires fertilizer salesmen to be licensed.

Not only has the tonnage of commercial fertilizers increased tremendously, but the materials now being sold contain higher percentages of plant foods than earlier materials did. Nitrogen is by far the major plant food in this state. The tonnages of potash used in California are relatively small. U.S. uses approximately equal tonnages, a ratio of 1:1:1, as compared to California's ratio of 8:3:1 of the three major plant foods.

The tonnage of dry mixtures reached a peak during the early years of the war when simple materials were in short supply. Although the tonnage of dry mixtures has increased, it has not increased as much as the total tonnage, and therefore dry mixed fertilizers constitute a diminishing percentage of the total, as shown by the dotted line. Thus, since 1949, the tonnage of dry mixed fertilizers has been increasing but it has been providing a diminishing proportion of the total tonnage. The tonnage of liquid mixed fertilizers has been increasing rapidly.

Years ago phosphorus was one of the major constituents in dry mixed commercial fertilizers but nitrogen has climbed from third place to the top ranking plant food in these materials.

The "average grade" has changed from approximately a 4-8-6 to a 10-10-5. The "average grade" of dry mixed fertilizers in the U.S. is a 5.6-12.5-11.4 with a total of 29.5% plant foods. In California it is a 10.7-10.2-5.6 with a total of 26.5%.

The fluctuations in use of dry mixed fertilizer and ammonium sulfate, the most popular simple material, have counterbalanced each other in ups and downs. Now both of these seem to be giving way to other materials. The status of mixed fertilizers in California is in marked contrast to their status in the rest of the U.S. Mixtures make up almost two-thirds of the total national tonnage of fertilizers, according to national statistics. They account for 20% of the tonnage of "commercial fertilizers."

Ammonia solution, standardized as a 20-0-0 grade, has spectacularly increased in only ten years from less than 1% to 20% of the gross tonnage. In 1958, ammonia solution provided 18% of all the nitrogen used in the state.

This presents an interesting picture of a fertilizer compound that is available in both a dry and solution form. Starting from scratch fifteen years ago, the tonnage of ammonium nitrate in solution form last year exceeded the tonnage sold in the dry form. Evidently farmers find fertilizers in liquid form convenient to apply. In 1958, liquid products (including anhydrous ammonia) provided 53% of the nitrogen, 17% of the phosphoric acid and 19% of the potash used in California.

The amount of anhydrous ammonia both in terms of gross tons and as percent of the total tons of commercial fertilizer shows that the rate of increase in use of this commodity exceeds the general increase in total tonnage.

Anhydrous ammonia contains a higher percentage of plant food than any other material. Although it now makes up only 7% of the gross tonnage, it supplies one-fourth of all the nitrogen used in California.

Sodium nitrate was widely used in California during the early war years, but tonnage dropped rapidly when other forms of nitrogen became available. California farmers are reluctant to add more sodium to their soils that already contain an excess of this element, and therefore prefer other types of nitrogen compounds.

Tonnages of superphosphates were not differentiated until 1943. The separate figures for single and treble superphosphate show that the single form is by far the most popular. This may be due in part to the fact that it contains a large proportion of gypsum which is a desirable addition to many soils in California. Single superphosphate now supplies 15% of the total phosphorus used in California and treble supplies 11%.

Ammonium phosphates supply a large portion of California's total phosphorus usage. In 1958, the 16-20-0 grade provided 15% of the total phosphorus used, the same percentage as supplied by single superphosphate. Dry mixed fertilizers supply 28%.

Fish meal, which was once popular, but now rarely used as a commercial fertilizer, and activated sewage sludge, which is a relative newcomer, both increased in usage. According to the definitions in California law, activated sewage sludge which contains more than 5% plant foods, is a commercial fertilizer, while ordinary sewage sludge, which contains less than 5%, is an agricultural mineral. To give some idea of the relative proportions of the two forms used in California, the 1958 tonnage figures show 15,085 tons of activated sewage sludge and 33,583 tons of ordinary sludge.

Usage of calcium nitrate in California shows an interesting variation which largely reflects import activity. All supplies of this material are imported and none was used in California during the war.

Gypsum is the major agricultural mineral sold in California and accounts for most of the tonnage. The material is of value for treatment of many California soils and large supplies at a low sales price are available from shallow surface deposits along the west edge of the San Joaquin Valley close to farms within ready hauling distance.

California uses most of the agricultural gypsum used in the U.S.

An increasing number of official samples has been drawn and analyzed. During 1958 the Bureau analyzed samples representing 3,235 commercial fertilizers, 586 agricultural minerals, 21 manures, 18 auxiliary plant chemicals and 19 soil amendments, making a total of 3,879 fertilizing materials.

Approximately 68% of the samples of commercial fertilizers are drawn from material in the hands of a purchaser at the time of sampling, 25% from materials in the hands of dealers and 7% from materials ready for sale but still in the hands of registrants. The figures for agricultural minerals are 72%, 20% and 8%, respectively.

Although more and more samples have been taken, the sampling rate has not kept up with the increasing tonnage. The Bureau is now securing one official sample for every 340 tons of commercial fertilizer sold. The average lot of dry mixed fertilizers sampled is 7.3 tons. The average lot of simple material sampled is 10.4 tons.

Approximately one lot out of every 35 to 50 sold is officially sampled.

The percentage of deficiencies found in official samples of commercial fertilizers varied widely and 18% of the samples analyzed during 1958 failed to meet their guaranteed analysis within the tolerances prescribed by law. California tolerances are 0.25% nitrogen, 1.00% available phosphoric acid, and 0.50% potash. Different firms show a sharp contrast in their ability to produce materials meeting the guarantees made for them.

Deficiencies found in official samples of agricultural minerals show even greater variations and 20% of official samples were deficient in 1958. The reason for the alternate variations in the record for agricultural minerals is obscure. Fewer samples are taken of these products than are taken of commercial fertilizers and perhaps the record is not as representative.

Occasionally sales values have been estimated by multiplying the segregated tonnages by average sales prices of various materials. In 1954 the estimates were: commercial fertilizers $85,000,000, agricultural minerals $6,800,000, dried manure $5,000,000, peat $5,000,000, other soil amendments and auxiliary plant chemicals $2,200,000, totaling $104,000,000.

Fertilizer Salesmen's School Plans Told

RALEIGH, N. C. — Plans for the 1959 North Carolina Fertilizer Salesmen's School, to be held on the N.C. State campus Sept. 3-4, was announced by J. M. Curtis and W. C. White, co-chairmen.

Included on program are discussions on "What Is a Good Salesman," "What Are We Selling," "What Are Our Customers Like," "A Farmer's Viewpoint of Fertilizer Selling," "The Sale: Bringing the Customer and Product Together," "Some Successful Agronomic Selling Tools," and "Public Relations: You, Your Industry and the Public."

A tour of the department of soils, N.C. State College, has been set up.

The evening banquet will feature E. A. Fails talking about "Success in Selling."

University of Arkansas Has Record Soil Tests

FAYETTEVILLE, ARK. — Arkansas farmers are making greater use of the University of Arkansas soil testing facilities. A record number of soil samples were tested for the 1958-59 fiscal year ending June 30, reports Dr. D. A. Hinkle, agronomy department head.

Nearly 37,000 soil samples were tested by the two soil testing and research laboratories of the University's Agricultural Experiment Station. This is almost 10,000 more than the 27,000 samples tested the previous year, he said.

The laboratory at Marianna handled nearly 23,000 soil samples and the laboratory at Fayetteville tested the other 14,000 for the 1958-59 season. March was the peak month at each location. More than 9,000 samples were processed at the Marianna laboratory in March.

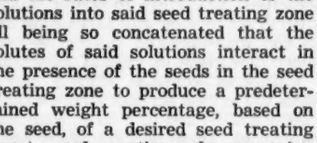
PATENTS and TRADEMARKS

2,894,873

Continuously Treating Seeds by Interaction Thereupon to Produce Desired Weight of Seed Treating Agent. Patent issued July 14, 1959, to Raymond P. Seven, Wheaton, Ill., assignor to Morton Chemical Co., Chicago. The method of treating seeds including continuously introducing seed into a seed treating zone provided with agitating means, simultaneously but separately introducing a plurality of solutions into the seed treating zone, the rate of seed introduction into said seed treating zone, the solutes and the solute concentrations of the solutions and the rates of introduction of the solutions into said seed treating zone all being so concatenated that the solutes of said solutions interact in the presence of the seeds in the seed treating zone to produce a predetermined weight percentage, based on the seed, of a desired seed treating agent, and continuously removing treated seed from said seed treating zone at a rate essentially the same as the rate of introduction of seeds thereto.

2,894,015

Fungicidal Compositions and Their Use. Patent issued July 7, 1959, to Glendon D. Kyker, Chattanooga, Tenn., assignor to Pennsalt Chemicals Corp. A compound having the structural formula:



in which X is halogen.

Process for preparing tetrakis-(pentahalophenyl)-pyrophosphate which comprises heating alkali metal pentahalophenate with phosphorus oxyhalide in the temperature range from about 65° C. to about the temperature of reflux.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of $25 must accompany each notice of opposition.

K.O., in capital letters for chemical for killing crabgrass or other weeds. Filed April 14, 1958, by Vaughan's Seed Co., Chicago. First use on or about April 2, 1957.

Turf Saver, in capital letters, for insecticides. Filed June 27, 1958, by Garfield Williamson, Inc., Jersey City, N.J. First use Oct. 2, 1954.

Stoker, in hand-lettered design with test-tube in background, for agricultural chemicals, namely, insecticides. Filed Sept. 23, 1958, by Stoker Co., El Centro, Cal. First use March 1, 1958; Jan. 1, 1958, as to test tube picture and word "Stoker."

Humpty Dumpty, in capital letters, for soil conditioner and fertilizer. Filed Sept. 19, 1958, by Schneider Bros., Inc., Chicago. First use Aug. 25, 1958.

Di-Syston, in capital letters, for systemic insecticide to be applied to cotton and alfalfa seed before-planting and on growing crops. Filed Dec. 24, 1958, by Farbenfabriken Bayer Aktiengesellschaft (German corporation), Leverkusen-Bayerwerk, Germany, assignee of Chemagro Corp. First use April 26, 1957.

Allied Chemical, in rectanuglar shield, for nitrogen chemicals, insecticides, fungicides, and herbicides and a list of industrial chemicals. First use 1953, on polyethyene.

The Garden Ace, drawing to represent playing cards, for soil conditioners. Filed Feb. 28, 1958, by Trump Products, Inc., New York. First use December, 1957.

Trump, in capital letters, for soil conditioners. Filed Feb. 28, 1958, by Trump Products, Inc., New York. First use May 15, 1940.

Multi-Tracin, in hand-lettered design, for material for supplying trace minerals to trees and shrubs in the nature of plant stimulants or fertilizers. Filed Nov. 21, 1958, to Puget Sound Pulp & Timber Co., Bellingham, Wash. First use in about June, 1957.

All-In-One Almond Spray Tested in California

BERKELEY, CAL.—The picture looks promising for an all-in-one almond spray that can be applied in early winter, for the control of major almond diseases the next spring, according to Joseph Ogawa, plant pathologist at the University of California, Davis.

Mr. Ogawa says progress has been made toward developing such a treatment, and that results of tests this year will be important in determining its success.

The single spray when available would be aimed at controlling brown rot, shot hole, leaf blight and scab, the four most bothersome almond diseases.

Until the one-time spray is developed, however, growers can help themselves by learning symptoms of the common diseases and limiting their sprays to the trees affected by any single disease, rather than spraying haphazardly with different fungicides, Mr. Ogawa says.

Present recommendations are for spraying for brown rot in the dormant, popcorn and full-bloom stages; for shot hole in the popcorn and petal-fall stages; for leaf blight in either the dormant or petal-fall stage, and for scab five weeks after petal fall.

No chemical control has yet been found, Mr. Ogawa notes, for bacterial blast and hull rot. Mr. Ogawa described studies on the control of common almond diseases during the recent Edible Tree Nut Conference at Davis.

Unknown Disorder Levels California Pear Trees

SACRAMENTO—The University of California and the California State Department of Agriculture report that pear trees have been collapsing and dying in increasing numbers in certain pear-growing districts of the state during the last few weeks, due to an unknown disorder.

The fruit stops sizing and the leaves of the trees suddenly wilt, followed by some scorching and death of the leaves.

The symptoms in the tops of the trees correspond to those produced where trees are girdled at the ground level.

Root examinations of the affected trees have revealed that many roots of ⅛ in. diameter or smaller are dead. Tests have shown that the roots and branches of the sick trees, when compared with those of normal trees, have relatively small amounts of stored foods.

Books on Fertilizers And Their Use

FUNDAMENTALS OF SOIL SCIENCE—Third Edition

By C. E. Millar, late Professor Emeritus of Soil Science; L. M. Turk, director; and H. D. Foth, associate professor of soil science, Michigan State University.

This text completely revises and brings up to date the second edition. Special attention is given to progress made in the basic principles of soil science since the publication of its predecessor. This edition includes more emphasis on soil texture and the concept of the texture profile, more discussion of the influence of the soil forming factors on soil development, and more facts about clay minerals to provide a clearer understanding of the differences in the behavior of soils. 496 pages, illustrated. 6x9¼"... $7.75

SOIL FERTILITY AND FERTILIZERS (1956)

Samuel L. Tisdale and Werner L. Nelson

An advanced college text, for juniors and seniors, following backgrounding course in soils. Covers elements required in plant nutrition, their role in plant growth, and the soil reactions to these nutrients. Several chapters on manufacture, properties and agronomic value of fertilizers and fertilizer materials. Latter part covers soil fertility evaluation and use of fertilizers in sound management program. 430 pages, cloth bound $7.75

PLANT REGULATORS IN AGRICULTURE

Dr. Harold B. Tukey

Published September, 1954. A text book giving background material for county agents, farmers, citrus growers, nurserymen, gardeners; providing fundamentals and general principles; covers encouragement of roots by plant regulators, control of flowering and fruit setting, parthenocarpy, abscission, prevention of preharvest fruit drop, delaying foliation and blossoming, maturing and ripening, inhibition of sprouting and weed control. Brings together specialized knowledge of 17 authorities in the field, with two chapters written by Dr. Tukey, head of department of horticulture at Michigan State College. 269 pages $6.50

THE CARE AND FEEDING OF GARDEN PLANTS

Published jointly by the American Society for Horticultural Science and the National Plant Food Institute.

An entirely new, one-of-a-kind book, it is designed to acquaint readers with nutritional deficiency symptoms or "hunger signs" of common yard and garden plants including lawn grasses, shrubs, flowers, garden vegetables, and cane and tree fruits. It stresses plant "feeding," or "what makes plants grow." Sixteen of the nation's leading horticultural authorities collaborated in its preparation. Cloth bound, 300 pages of text and illustrations including 37 pages in full color $3.00

AUXINS AND PLANT GROWTH

A. Carl Leopold

A 366-page book, complete with bibliography, appendix, and index, discusses the fundamental and applied aspects of growth hormone and synthetic auxin action in plants. These are of interest to all workers in agricultural chemicals—for weed control, flowering control, fruit set, flower or fruit drop and plant propagation. The text is divided into two sections, (1) fundamentals of auxin action, and (2) auxins in agriculture. These cover developmental effects of auxins, the physiological and anatomical effects of their application, the chemical nature of growth regulators, and methods of applying auxins and their persistence in plants and soils. Other subjects covered: rooting, parthenocarpy, flower and fruit thinning, control of pre-harvest fruit drop, flowering, dormancy and storage, herbicides, miscellaneous uses of auxins, and potentials of auxins and auxin research. Published by University of California Press..... $5.00

ECONOMIC AND TECHNICAL ANALYSIS OF FERTILIZER INNOVATIONS AND RESOURCE USE

By E. L. Baum, Earl Heady, John Pesek and Clifford Hildreth.

This book is the outgrowth of seminar sessions sponsored by TVA in 1956. Part I—Physical and Economic Aspects of Water Solubility in Fertilizers. Part II—Examination of Liquid Fertilizers and Related Marketing Problem. Part III— Methodological Procedures in the Study of Agronomic and Economic Efficiency in Rate of Application, Nutrient Ratios and Farm Use of Fertilizers. Part IV—Farm Planning Procedures for Optimum Resource Use. Part V—Agricultural Policy Implications of Technological Change. It presents new methodological techniques for more efficient handling of research problems related to fertilizers and provides more meaningful answers to problems of practical application $1.95

HUNGER SIGNS IN CROPS—Second Edition

A symposium—published jointly by the American Society of Agronomy and the National Plant Food Institute.

A comprehensive study of nutrient-deficiency symptoms in crops compiled by 19 of the leading authorities in the field. It is being widely used by college professors, research and extension specialists, industrial chemists and agronomists, county agents and teachers of vocational agriculture. Many farmers have found it of particular value in planning their fertilizer programs. Cloth bound, 390 pages, 242 illustrations, including 124 in full color $4.50

USING COMMERCIAL FERTILIZER (1952)

Malcolm H. McVickar

Dr. McVickar is chief agronomist of the National Fertilizer Assn. The book deals specifically with commercial fertilizer, how it is produced and how to use it. It is non-technical. It includes chapters on how to measure fertility of soils, secondary and trade-element plant foods. 208 pages, 106 illustrations, cloth bound..... $3.50

COMMERCIAL FERTILIZERS, Their Sources and Use—Fifth Edition (1955)

Gilbeart H. Collings

Based upon the author's practical experience as an experiment station agronomist and teacher, and incorporating information on recent developments by agronomists, chemists, engineers and fertilizer manufacturers. Authoritative on problems concerning commercial fertilizers and their use in gaining larger yields. 160 illustrations, 522 pages $8.50

APPROVED PRACTICES IN PASTURE MANAGEMENT (1956)

M. H. McVickar, Ph.D.

Outlines clearly and concisely how to have productive pastures to furnish high-quality forage for livestock, economically and efficiently. Written for grassland farmers. Covers the important activities associated with establishment, management and efficient use of pastures as grazing lands or as a source of fine winter feed for livestock. It is as specific as possible for all U.S. pasture areas. Twenty chapters, 256 pages, illustrated $3.00

MANURES AND FERTILIZERS

A survey by the Ministry of Agriculture and Fisheries, dealing with soil analysis, inorganic fertilizers, waste organic substances and principles of manuring. In language to give the farmer basic principles of increasing soil fertility by the application of natural organic manures and synthetic inorganic fertilizers. Many important tables on quantitative data $2.50

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CALIFORNIA CONFERENCE—Participants at the recent seventh annual California Fertilizer Assn. conference included representatives of industry, government officials and University of California personnel. Top picture shows Dr. Daniel G. Aldrich, Jr., dean of agriculture, University of California; Howard H. Hawkins, president, CFA; and Dr. Logan S. Carter, California State Polytechnic College, San Luis Obispo. Second photo: panel on fertilizer placement, with Dr. J. E. Knott, moderator, at rear. Front row, left to right: Dr. M. H. McVickar; Dr. John Lingle; Dr. Duane Mikkelsen; Dr. Oscar Lorenz; and F. J. Hills. A second panel on tree fruit and vine nutrition was presided over by M. E. McCollam, at rear. Front row, from left: Aldo D. Rizzi; Dr. Omund Lilleland; Dr. Carl Hansen; Dr. James Cook and Vincent E. Petrucci. Below is over-all shot of attentive audience at the University of California's college of agriculture, Sacramento. The conference, sponsored by the soil improvement committee of the CFA, attracted some 200 persons representing the fertilizer industry as well as representatives from other agricultural pursuits.

CALIFORNIA

(Continued from page 1)

several grape producing areas of the state.

Robert Z. Rollins, chief, California Bureau of Chemistry, Sacramento, pointed out that his regulatory agency is primarily one which administers those portions of the Agricultural Code of California which pertain to registration, labeling and sale of fertilizing materials and agricultural minerals, as well as laws which pertain to pesticides, spray residue and the agricultural pest control business. He exhibited a number of charts which illustrated graphically the trend to greater use of fertilizer in California and the country as a whole. As an example, in 1920, a total of 66,380 tons were sold in California, and the graph showed only one set back, just following the war, in its steady climb to 1,130,344 tons in 1958.

Aldo D. Rizzi, extension pomologist, University of California, Davis, presented a series of color slides showing nutritional deficiency symptoms in commercial orchards, and of results following corrective treatment.

Dr. J. E. Knott, chairman, department of vegetable crops, University of California, Davis, conducted a tour of a number of fertilizer test plots on the Davis campus, which occupied all in attendance the entire afternoon.

Dr. Aldrich, speaking at the banquet that evening, reviewed the development of California agriculture from the days of the Spanish missions, presidios and pueblos established between 1769 and 1821, to the present time.

He said that the real development of cattle ranching began when Mexico threw off the yoke of Spain in 1821. Grazing was the rule on the lush grasses of the fertile valley lands, but, as population increased, and grain cropping developed with its protective fences, livestock production was forced on to the terraces and foothills.

Irrigation facilities began to be developed in the early 1800's and irrigated orchards, vineyards and other intensively farmed crops replaced grain on the valley land. Grain moved up on to the terraces, and livestock production was forced to move further into the foothills and mountains.

Since World War II, Dr. Aldrich said the rich valley lands have more and more been occupied by factories, homes, freeways, shopping centers, recreational areas and other urban developments. This has forced much irrigated agriculture to poorer lands, with grain moving still further up into the foothills, and the cattle and sheep now graze up beyond the grain.

California contains slightly more than 100 million acres of land, he said, which are divided into 18 general soil categories. These soil resources have been produced by the interaction of climate, vegetation, topography, parent material and time, and their innate capacity to produce the food and fiber required by man shall be improved or impaired depending upon the practices he adopts for managing them.

Dr. Aldrich then told of California's annual water supply of about 103 million acre feet, roughly enough to cover the entire state to a depth of 1 ft. At the present time, he said, the state utilizes about 21 million acre feet of this water, over half of which is used in the Central Valley area. He pointed to the fact that 72% of the state's runoff occurs north of a line drawn through Sacramento, whereas 77% of the present water requirement occurs south of this line.

There are now about 14 million people in California, he reported. Of these, 54% live in southern California, 25% in the San Francisco Bay area and 18% in the Central Valley. About 1,055,000 acres are now devoted to urban uses. The latest farm census indicates that there are 123,000 farms in California or 16,000 less than in 1945. He said the typical California farm averages 307 acres and involves a capital investment of $60,000. More than 250 crops are grown commercially on these farms and require nearly 500,000 people to produce them.

Irrigated crops make use of 7 million acres of land, divided as follows: roughly 1 million acres in alfalfa, pasture, hay and grain, and fruit and nut trees; ¾ million acres in truck crops; ½ million acres in vineyards; and 1¾ million acres in field crops.

He predicted that during the coming five years, Central Valley projects will provide water for an additional 150,000 acres of intensively cropped valley land. In still another five years, completion of the Folsom north and south unit extensions will irrigate an additional 200,000 acres in the Sacramento Valley. By this time the San Luis project on the west side of the San Joaquin should develop 450,000 more acres of some of the finest agricultural land in the state. If the state water plan should be launched during this 10 year period, an additional 370,000 acres of land will receive irrigation water. Thus, during the next 10 years a total of more than 1 million new irrigated acres can be brought into production.

On Tuesday morning the program resumed in Hunt Hall on the Davis campus, for two panel discussions. The panel on "Fruit Tree and Vine Nutrition" was moderated by Millard E. McCollam, chairman of the association's soil improvement committee and western manager, American Potash Institute, San Jose. Panel members were: Dr. Lilleland, Dr. Carl J.

Hansen, pomologist, University of California, Davis, Mr. Rizzi; Dr. Cook, and Vincent E. Petrucci, head, viticulture department, Fresno State College, Fresno.

Dr. Knott moderated the panel on "Fertilizer Placement." Panel members were: Dr. Malcolm H. McVickar, chief agronomist, California Spray-Chemical Corp., Richmond; Dr. Lorenz; Dr. D. S. Mikkelsen, associate agronomist, department of agronomy, University of California, Davis; Dr. John C. Lingle, department of vegetable crops, University of California, Davis, and F. J. Hills, extension agronomist, University of California, Davis.

The time and location of the Eighth California Fertilizer Conference will be named by the soil improvement committee at its next meeting.

Sales in the States

Kentucky

LEXINGTON, KY.—Fertilizer sales in Kentucky during May, 1959, amounted to 150,782 tons or 69 tons more than May a year ago, reported the department of feed and fertilizer, Kentucky Agricultural Experiment Station. Most popular grade was 5-10-15, with 36,475 tons sold.

★

Oklahoma

STILLWATER, OKLA.—Sales of fertilizer in Oklahoma during May, 1959, amounted to 14,374 tons it was reported. Most popular grade according to the report was 10-20-10 with 4,337 tons sold.

★

Arkansas

LITTLE ROCK, ARK.—The Arkansas State Plant Board reported fertilizer sales for June, 1959 amounting to 37,568 tons, compared with 30,048 for the same month last year. Nitrate of soda was the most popular fertilizer in the state, selling 10,074 tons.

★

Florida

TALLAHASSEE, FLA. — Fertilizer sales in Florida during June amounted to 159,785 tons, reported Nathan Mayo, commissioner, State of Florida Department of Agriculture. This broke down to 68,503 tons of materials and 91,282 tons of mixed fertilizers.

Monsanto Names New Assistant Research Head

ST. LOUIS—Dr. John L. Payne, Jr., St. Louis, a senior research group leader with Monsanto Chemical Co.'s inorganic chemicals division, has been promoted to an assistant director of the division's research department, announced E. G. Somogyi, department director.

Dr. Payne, who holds a doctorate in chemistry from Purdue University (1947), joined Monsanto in 1944 at Mound Laboratory, Miamisburg, Ohio, which the company operates for the Atomic Energy Commission. In 1953 he transferred to the former phosphate division (now the inorganic chemicals division) where he became an authority on the use of phosphoric acid in the fertilizer, food and metal industries. More recently his time has been devoted to various exploratory research studies.

DISTRIBUTOR NAMED

CEDAR RAPIDS, IOWA—Heisler's Inc., Willard, Ohio, is a new distributor for Highway Equipment Co. of Cedar Rapids. They will handle "New Leader" lime spreaders, combination lime and fertilizer spreaders, wide spread lime and fertilizer spreaders, and mobile blenders in 15 Ohio counties.

PROJECT

(Continued from page 1)

goal is approximately 5 million acres for land to be put in the program under contracts beginning with 1960 crops. This is the estimated maximum additional acreage that can be accommodated under the $375 million annual program authorized by Congress for 1960. This compares with approximately 13 million new acres placed under contract in 1959.

Approximately 10 million acres will also remain under conservation reserve contracts in 1960 from years previous to 1959. If farmers contract for the expected 5 million new acres in 1960, the total acreage in the program next year will be approximately 28 million acres.

The principal conservation reserve changes for next year will be as follows:

1. Land owned by a state, county, town, or local government will be ineligible for the program—a rule which is already in effect for federal land.

2. Land which has changed ownership (except through inheritance) since Dec. 31, 1956, is ineligible to enter the program in 1960.

3. If land under a 1960 conservation reserve contract is sold, the contract generally may be assumed by the purchaser only after it has been in effect for 3 years.

4. The priority system of accepting applications has been modified to assure first consideration to farmers who were unable to participate in the 1959 program because of lack of funds.

As in 1959, the 1960 conservation reserve will be conducted on an offer-and-acceptance basis. Under this plan, the farmer will request that a basic annual per-acre rate be established for his farm, indicating whether he plans to place part or all of his eligible cropland in the program.

California Ranges Called Worst Since 1939

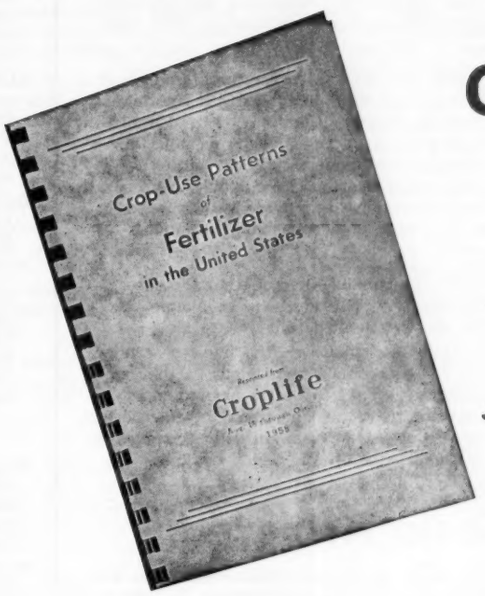
SACRAMENTO—California ranges are in their worst condition since 1939 and there is little prospect for improvement until autumn rains start, according to the California Department of Agriculture.

Statewide the condition of pastures and ranges is set at 68% of normal while in the Sacramento and San Joaquin valleys the rating is 72 and 73%, respectively. In southern California the condition is estimated at 56% of normal.

PREDATORS RELEASED

SACRAMENTO—Six thousand larvae of the cinnabar moth imported from France have been released in Mendocino County, California, in an attempt to control tansy ragwort, a stock killing weed. The release of the larvae is said to be the first in the United States.

You'll get a better understanding of the fertilizer market from this valuable new book



Crop-Use Patterns of Fertilizer in the United States

by

J. R. ADAMS L. B. NELSON D. B. IBACH

U.S. DEPARTMENT OF AGRICULTURE

This significant report was compiled by the U.S. Department of Agriculture after thorough studies of fertilizer use in the United States. Crop-Use Patterns covers questions which, until now, have not been adequately answered. Crop-Use Patterns is based on information gathered from every fifth farm surveyed in the most recent U.S. Census . . . providing a broad base of national information.

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The regional circulation of this issue is concentrated in the Western states.

FIGURES TELL STORY . . .

Fertilizer Prices More Than "Hold Line" During Past 20 Years, Manufacturer Says

THE MANNER in which fertilizer prices have "held the line" in the face of rising costs of everything else a farmer buys has been pointed out from time to time by various people in the industry during the past couple of years. It has been emphasized that plant food, one of the prime raw materials utilized in growing a crop, is still the farmer's best buy and an important factor in reducing unit costs of production.

Fertilizer manufacturers are certainly conscious of this situation. While there is ample reason to be proud of the ability to make high grade plant food available to farmer-consumers at a low price, there is also the other side of the picture over which many in the trade are concerned. This is the question of whether the industry can maintain the type of service its customers deserve, if the margin of profit persists at such a low point.

For now, however, let's look at the picture through the eyes of a manufacturer who comments in a recent letter that when all factors are taken into consideration, the actual cost of plant food was a fraction cheaper to farmers in 1959 than it was 20 years ago.

E. B. Johnston, manager of the Centrala Farmers Co-op at Selma, Ala., presents a group of facts concerning fertilizer prices of 1939 vs. 1959, indicating that despite a slight rise in cost of a ton of fertilizer, the price per unit of plant food has risen hardly at all.

"These figures are taken from our certified public accountant's audit for the years 1939 and 1959," Mr. Johnston writes. "They cover all fertilizer materials and complete mixed fertilizers handled during the years in question." The following table presented by Mr. Johnston to indicate the comparisons:

	1939	1959	% Increase
Plant food per cwt. ...	17.3 lb.	26.2 lb.	51½ %
Average per ton cost ..	$24.74	$37.72	52¼ %
Cost per unit of plant food	$ 1.43	$ 1.44	.07 %

Mr. Johnston reviews some of the factors involved as follows: "All fertilizers sold in 1939 were in 200 lb. bags, while all fertilizers in 1959 were packed in 100 lb. bags, reflecting higher packaging cost. Also reflecting in the cost of 1959 fertilizers, as represented by the figures above, are well over 1,000 tons containing insecticides and/or minor minerals which were not included in 1939 fertilizers.

"With the above two factors in mind, the actual cost of plant food was a fraction cheaper to farmers this year than it was twenty years ago. Any industry capable of lightening its customers' physical burden by 51½% and at the same time is able to keep costs at the figure they were twenty years ago, can feel proud of such accomplishments."

This is a graphic example of what the successful companies in the trade have been able to do over the past couple of decades.

As was mentioned above, the industry can be proud of these accompishments, but at the same time, the trade would be better able to serve its customers and to do the educational job that needs to be done, if prices had been allowed to rise even a little more than they have.

Eradication of Hall Scale Achieved

ERADICATION OF Hall Scale, destructive pest of stone fruit and nut crops, is practically a certainty following some eighteen years of intensive work on the part of the U.S. Department of Agriculture and the California state department of agriculture. No Hall scale has been found in the United States since 1956, according to Robert W. Harper, chief of the bureau of entomology of California.

This means, of course, that unless inspections should turn up living insects during the next year, the pest may be considered eradicated.

Californians were understandably perturbed by the presence of this pest which could threaten the entire stone-fruit industry of the country, nearly half of which is centered in California. This industry comprises some $267 million, nationwide, with California accounting for $150 million of the total.

Hall scale is a tiny but destructive pest of major economic importance to all deciduous fruit trees. The insect is a surface feeder, sucking plant juices from the tissues attacked. It feeds on all parts of the host, including the fruit.

The scale's habit of secreting itself in bark cracks and under bud scales makes it difficult to detect and to control. This explains the rather high cost of eradication of the pest. Nearly $1,500,000 in joint federal-state funds have been expended to bring about control of Hall scale in California, with more than two-thirds of the money being provided by USDA.

Hall scale has been known in California for some 25 years, having been first reported in the California plant introduction gardens in 1934. It was thought to have been introduced on transplanted root stock from Asia sometime prior to 1934.

The California infestations, the only ones recorded in the Western Hemisphere, were found limited to the Chico and Oroville areas in Butte County, and to two small infestations in Davis, Yolo County.

In 1935, the California department of agriculture attempted to eradicate the insect pest, but the effort was unsuccessful. Since 1941, however, state, federal and county agencies have cooperated in a more intensified eradication program.

Initial field methods of eliminating the insect included spraying of host trees with oil insecticidal sprays. However, the difficulty of reaching the insect with the spray prevented a complete kill, California officials said. Eradicative methods were switched to more penetrating fumigation featured by covering host trees with tarpaulins and applying hydrocyanic acid gas to the tarp-covered trees.

Of the nearly 50,000 host trees within the fumigation area, more than 17,000 were removed with the permission of their owners. Remaining trees were given three annual fumigations. The last fumigation was completed in 1957.

Subsequent control work has been restricted to surveys to verify successful eradication. Many thousands of trees have been examined during the past three years without discovery of new infestation. "Mop up" surveys during the remainder of 1959 and the spring of 1960 will determine if eradication has been achieved finally.

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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is $5 for one year ($8 a year outside the U.S.). Single copy price, 25¢.

LAWRENCE A. LONG
Editor

DONALD NETH
Managing Editor

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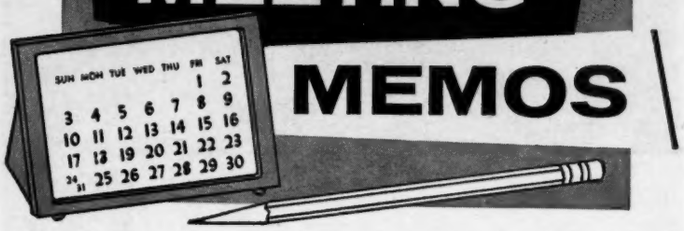
MEETING MEMOS



Aug. 28-29—Southeast Fertilizer Safety School, Heart of Atlanta Motel, Atlanta, Ga.

Aug. 28-29—Minnesota Agricultural Ammonia Institute, University of Minnesota, St. Paul, Minn.

Sept. 24—Fertilizer Technology & Economics School & Tour for California Bankers, University of California, Berkeley, Cal.

Sept. 25—Annual Crops Day, University of Arizona, Safford, Ariz.

Oct. 15—NPFI Conference on Chemical Control Problems, Shoreham Hotel, Washington, D.C.

Meeting Memos listed above are being listed in this department this week for the first time.

July 29—Annual Kentucky Fertilizer Conference, Guignol Theater, University of Kentucky campus, Lexington, Ky.

July 31—Agronomy Field Day, University of California, Davis, Cal.

Aug. 3-7—Gordon Research Conference on biochemistry in agriculture, Kimball Union Academy, Meriden, N.H.

Aug. 11-12—Summer Tour of the Ohio Pesticide Institute, at Ohio Agricultural Experiment Station, Wooster, Ohio.

Aug. 12-13 — Northeast Fertilizer Safety School, Cornell University, Ithaca, N.Y.

Aug. 18—Alabama Fertilizer Conference, Horticulture Substation, Cullman, Ala. and Tennessee Valley Substation, Belle Mina, Ala.

Aug. 18-19—Midwest Fertilizer Safety School, National Safety Council Headquarters, Chicago, Ill.

Aug. 19—Alabama Fertilizer Conference, Tennessee Valley Authority, Wilson Dam, Ala. and Upper Coastal Plain Substation, Winfield, Ala.

Aug. 18-22—Annual Convention of the Canadian Fertilizer Assn., Bigwin Inn, Lake of Bays, Ontario.

Aug. 25—Fertilizer industry tour, Miami County, Ohio, NPFI sponsored.

Aug. 26-28—Soil Conservation Society of America, 14th Annual Meeting, Rapid City, S.D.

Aug. 30-Sept. 3—American Institute of Biological Sciences annual meeting, Pennsylvania State University, University Park, Pa.

Sept. 3-4—Fertilizer Salesmen's School, North Carolina State College, Raleigh, N.C.

Sept. 10—New pesticide review for Central California, sponsored by Western Agricultural Chemicals Assn., Fresno Fairgrounds, Fresno, Cal.

Sept. 24-25 — Annual North-Eastern Fertilizer Conference, NPFI, Biltmore Hotel, New York, N.Y.

Sept. 30-Oct. 1—Fourth Southeastern Fertilizer Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

Oct. 13-14—Western Agricultural Chemicals Assn., fall meeting, Villa Motel, San Mateo, Cal., C. O. Barnard, executive secretary.

Oct. 14-16—Pacific Northwest Plant Food Assn. Annual Convention, Chinook Hotel, Yakima, Wash.

Oct. 21-23 — National Agricultural Chemicals Assn., 26th annual meeting, French Lick-Sheraton Hotel, French Lick, Ind., Lea S. Hitchner, executive secretary.

Oct. 27—Seventh Annual Grassland Farming Conference, Extension Service, Rutgers University College of Agriculture, New Brunswick, N.J.

Nov. 4-5—Fifth Annual Oklahoma Fertilizer Dealers and Crops and Soils Conference, Stillwater, Okla.

Nov. 4-6—Fertilizer Industry Round Table, Mayflower Hotel, Washington, D.C. Dr. Vincent Sauchelli, National Plant Food Institute, chairman.

Nov. 8-10—National Fertilizer Solutions Assn., Annual Convention, Statler Hilton Hotel, St. Louis; Muriel F. Collie, 2217 Tribune Tower, Chicago 11, executive secretary.

Nov. 9-11 — California Fertilizer Assn., 36th annual convention, Fairmont Hotel, San Francisco.

Nov. 16-20 — National Aviation Trades Assn., 20th annual convention, New Orleans, La.

Nov. 30-Dec. 4—27th Exposition of Chemical Industries, New York Coliseum, New York City.

Nov. 30-Dec. 5—Joint meeting, Entomological Society of Ontario; Entomological Society of Canada and Entomological Society of America, Hotel Sheraton-Cadillac, Detroit, Mich.

Dec. 2-3—Annual Missouri Fertilizer Conference, Columbia, Mo.

Dec. 7-10—Central Canada and North Central Weed Control Conferences, Royal Alexandra Hotel, Winnipeg, Manitoba, Can.

Dec. 8-10—Joint Meeting of Western Canadian and North Central Weed Control Conferences, Winnipeg, Manitoba.

Dec. 9-11—International Crop Protection and Pest Control Exhibition, Seymour Hall, St. Marylebone, London, England.

Dec. 10-11—Annual Arkansas Plant Food Conference, Little Rock, Ark.

1960

Jan. 5-6—Annual Texas Fertilizer Conference, College Station, Texas.

Jan. 6-8—14th Annual Meeting, Northeastern Weed Control Conference, Hotel New Yorker, New York City.

Jan. 14-16—10th Annual Convention of the Agricultural Aircraft Assn., El Mirador Hotel, Palm Springs, Cal.

CALENDAR FOR 1959-60

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Dusters Complete Record Project Against Bollworms

FRESNO, CAL.—The largest row-crop aerial application project ever undertaken in the U.S. came to a close recently. More than 17,000,000 lb. of DDT sprays and dusts were dropped from airplanes on 75,000 acres of cotton in Arizona, in a series of eight, six-day-go-arounds, to kill pink bollworm, according to California Agricultural Aircraft Assn.

The federal and state governments, along with farmers, cooperated in this all-out fight against the bollworm. Some farmers last year reported losses as high as ¾ of a bale per acre of long staple cotton, and immeasurable loss in grade.

The Arizona Aerial Applicators Assn.—28 separate companies, flying 94 different airplanes, bid, got and completed the job.

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Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge $2.25. Situations wanted, 10¢ a word; $1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of $11 per column inch.

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Wisconsin Eqpt. & Distr. Co.
Witco Chemical Co.

THESE MEN HAVE LEARNED FROM EXPERIENCE THAT TOXAPHENE MAKES DOLLARS...AND SENSE

Hartford Jackson, Columbia, La. *"I set about the best cotton crop I have ever seen, following the toxaphene, toxaphene-DDT control program . . ."*

D. L. Hall, Eudora, Ark. *"The toxaphene and toxaphene-DDT control program certainly worked for me, and made me money . . ."*

W. E. Moore, Sherrill, Ark. *"We were able to pick cotton two weeks earlier on the acreage where we followed this program. It really paid off for us . . ."*

H. C. Bradney, Montrose, Ark. *"This program saves me expensive late-season applications and does an excellent job. Last year I cut my insect control costs in half . . ."*

O. L. Cox, Ruleville, Miss. *"I got on the toxaphene program early in the season and continued on a regular schedule. I believe those six early applications paid more dividends than anything we did with our cotton crop all year long . . ."*

P. E. Cloutier, Bermuda, La. *"We set one of our best crops last year, and we think the toxaphene, toxaphene-DDT insect control program was a big factor. We're basing our 1959 program on the same plan . . ."*

Morris A. Roberson, Gilliam, La. *"I like the early production and early harvest that comes with the toxaphene insect control program. We had good control all season, and I plan to use the same program this year . . ."*

Clarence R. Smith, Cleveland, Miss. *"We believe in this program. It gave us excellent insect control, saved us money, and helped us make a cotton crop under adverse conditions . . ."*

O. L. Garmon, Jr., Marks, Miss. *"I used the toxaphene program on more than 700 acres of cotton. I know you need to get the overwintered boll weevil, and this program does that. I had good insect control all year . . ."*

Insecticide salesmen have to do more than just take orders for dusts and sprays. In the Mid-South, for example, progressive formulators and dealers are showing cotton farmers how a planned, season-long insect control program based on toxaphene can be the most satisfactory—and profitable—practice. These statements from farmers already following such a program reflect the growing interest in more effective use of insecticides.

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TOXAPHENE

A product of the Agricultural Chemicals Division
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